Bob Cooper's

APRIL 15 2004

SatFACTS

MONTHLY

Reporting on "The World" of satellite television in the Pacific and Asia

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FIRST Results: American TV in the Pacific

Marketing and installing FTA systems

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our TENTH year!

COOP'S COMMENT

April 15, 2004

A North American reader who has felt the wrath of a pay-TV provider writes, "At one time I was purchasing virgin DirecTV access cards from Hughes and reselling them, not dissimilar to how I understand Australian firms purchase Aurora cards from Optus and resell them after a small mark-up. I was doing, for a smaller profit margin, exactly what DirecTV itself was doing and as I was purchasing the cards openly from Hughes (the source), there was nothing secret about my activity nor who I was. NDS, then the card's internal language provider, brought suit against me for this activity. As it would turn out, for more than a year, they had been tapping my telephones, intercepting my e-mail, inspecting my inward bound shipments before I even knew they were looking at me. They sued me with the open intent of ruining me financially, even though (as the court would later agree) I/we never 'touched a card' (in any way modified or corrupted the card contents), nor had we ever bought or otherwise received any hardware or software for hacking. It cost me more than $250,000 to defend myself, to prove my innocence and I certainly would not go through that 8 months of hell again. Today, the legal system in the USA is handing out jail time for such cases; it is actually statistically better (safer) to sell drugs than it is to sell smartcards! If DirecTV or NDS or anyone had ever come to me and either told me or warned me that they would bring suit unless I stopped being a distributor for their virgin cards, I would have instantly stopped what I was doing. Even if, as it turned out, I was doing nothing contrary to any law. During the course of the long sequence of events that finally led to my exoneration, one of their lead lawyers with an indignant sneer on his face looked me in the eye and said, '**All** satellite dealers are pirates and sooner or later we will get every one of them'. Proof of this came when they suggested dropping 'charges' in return for me stopping selling satellite equipment - **any** satellite equipment!"

This is but one example of what happens in a culture where money buys laws and courtroom time. You don't have to be guilty to lose, you simply have to run out of money or the energy or will to defend yourself against the charges. Our American in quotes was one of the few who had both the stamina and the bucks to see this through.

"The one thing I learned is that legal or illegal does not matter, right or wrong does not matter. When they sue you, it opens up a big hole in your bank account. Money starts flowing out at an alarming rate and after 3 or 4 months your only focus is on 'closing that hole'. I think most pirates (today) know this, and that's why they position themselves to disappear overnight. Piracy is not a game you can afford to play (in America) unless you are nameless and address less. If you stay in the same (physical) location very long, they won't need to subpoena your shipping records to obtain your customer list because they have already used their broad court-given search and seizure powers to identify every person you have shipped to."

If this is not enough to turn you off piracy activity, perhaps a visit to http://www.legal-rights.org/ will be convincing.

Yes, it is a tug-of-war. For around an extra $200 install and around $25 a month you can order in a second (third, etc.) STB from Foxtel or Austar (or Sky NZ). Or, for A$450 or so, a Dreambox which allows you to share one card with two or more boxes. It seems innocent enough to start - just a spare box in the bedroom. But it sits there, and over time you forget your reasoning in the first place. "*Perhaps just one more box, for a friend?*" Welcome to the world of piracy.

In Volume 10 ◆ Number 116

No physical CAM, no card: "Pay TV without paying" - p. 6
DreamCrypt: Hacker's answer to hacking (Rolf Deubel) -p. 13
Additional assistance - interrogating American satellites (direct) - p. 14
Inside Foxtel's (cable) STB - p. 20; 5mm by 5mm satellite tuner chips - p. 20;
Code Key number instruction - p. 20; WiFi status in NZ - p. 22; Public code key -p. 22
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Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; Technical Topix -p. 20; SatFACTS Digital Watch -p. 23; With The Observers -p. 27; At Sign-Off (Marketing, installing FTA) -p. 31

-On the cover-

"Fishing on the other side" - the fine points of US domestic satellite hunting (p. 14)

LETTERS

Piece of piss

"The Dreambox is awesome. OK, I admit I nearly threw it out of the window when trying to get my head around what had to be done to make it play but once I did do this - with help from some friends - I got it going. The first thing I tried was Irdeto 2 cardshare. Piece of piss, running flawlessly over 24 hours on a very marginal signal (I purposefully misdirected the antenna to get me down to where it would have spurts of tiling), and I could not make it hang up. Very impressive. I am now working on getting it to share SECA 2. What a kick!"

Happily pissed and delighted, Australia

Determining horizon?

"I want to look east but as a newbee cannot work out where my eastern horizon ends. Is there some formulae or other handi-reference that will help me figure this out?"

Anxious for USA, Queensland

Here is the quickest, easiest way assuming you have access to Internet. (1) Go to http://www.lyngsat.com. (2) Click on 61W-160W (Americas). (3) Now select as a reference point Satcom C4/135W - click on. (4) Go to top of C4 listing, find SatTracker, and click on. That will produce a "map" showing Australia and the world. (5) Using your own geographic co-ordinates (such as Brisbane is 27.3 south, 153.0 east), slide the moving dot around until the right hand (white background) display shows something close to 27S and 153E. (6) Now, look at top of white table (on right hand side of display) and it will show the elevation (7.x) and azimuth (81.x) degrees from Brisbane to 135W. Do the same with each eastern (USA) satellite location (going to each in turn, on Lyngsat) until the display says "not visible" and this means you have just lost LOS (line of sight) to that satellite; further east will be beyond your view (for our Brisbane example, your at-horizon bird will be Galaxy 13/127W).

Searching for meter

"I am looking for a used or new meter available here in New Zealand for aligning Sky NZ and FTA dishes. Can anyone with a meter for sale contact me? "

Raycom@slingshot.co.nz

New meters are stocked in NZ by Clayworth Electronics (fax 09-444-9303) but their prices for meters also sold by Laceys.tv in Australia (see p. 3, here) are significantly greater. Avoid simplistic in-line analogue-based meters which do indicate relative signal strength but with high error rates. A "real" installer in today's environment would be using Lacey's EP-300. Anything less is a "toy" with false readings that will cost you time and money.

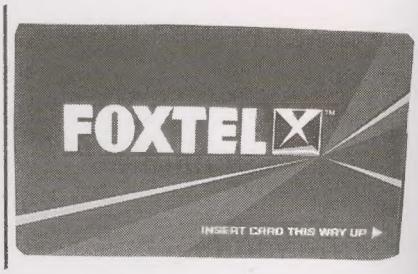
PROGRAMMER PROGRAMMING PROMOTION UPDATE

April 15, 2004

Those darn dots. Another dot-com error (SF#115, p. 4). Spaceshift, the folks who have perfected the technology to "move" your bedroom TV set electronically anyplace in the world - the correct informational website address is in fact http://spaceshift.org. We had an extra . (dot) in there - much to our regret. Now, try again.

"Digital Satellite Receiver." Featuring "Powerful sing chip: STi5518." The box is from China, and the software allows code key access to what are nominally CA services. But there is a wrinkle here: No physical CAM, no CA card. Just a FTA receiver with software you add from Internet and you are away to enjoy a variety of programming intended for paying customers. It is "pay-TV without paying," as we explain starting on p. 6. No, we have no idea what a "*sing*" chip is.

Foxtel's double whammy. Tarnishing a gala "opening night celebration" broadcast live on 23 channels (including, of all places, TVSN!) was a behind the scenes labour strike by installers who found their training inadequate, their pay sub-standard and Foxtel's approach to their concerns tantamount to those who once ran slave ships into Australia and Norfolk. As frosting on the cake, Internet "sharing" of Foxtel services has exploded - not just with Dreambox (SF#114, p. 19) but also with standard ADSL/DSL/broadband Internet connected consumer groups who are sharing one subscription to as many as 30 "extended" viewing locations. We explore the "Fox-World" on p. 28, here.



SECA 2? Already some European sites are showing *code key* numbers to access Seca 2 CA services. Here's the rub - the code key approach works ONLY with a small number of European channels, those still using old-style "readable smartcards" (reported as Seca Version 7.0, whereas higher-number, later version Seca are in use in Pacific). This means any newer style Seca 2 (such as employed in Pacific) will find no joy here. Confused? Page 6, this issue.

UK not ready for analogue switch-off? UK government media watchdog Ofcom has issued report predicting that by 2006 (date specified by law) "analogue shut-down" date, 15% or more UK homes will still not have digital delivery installed. Presently, 50% of British homes are reported to have digital (via satellite, or, cable, or DVB-T) and while this is apparently highest penetration of (combined) digital delivery systems in world, Ofcom believes the "last holdouts" will need prodding - perhaps a free gift of digital, installed on their behalf, before analogue can be shut-down. USA also has 2006 date but at moment the digital take-up is under 10% there.

TARBS Pacific test. March 8-11, Australian based TARBS lit-up I701/180E Ku band spot beam (36 MHz, MCPC, FTA during test) S2 delivering test cards from Sydney to allow locations from New Caledonia to Fiji to "measure" signal. TARBS has plan to deliver 15 channel subscription service into area, possibly featuring multiple channels in various Indian dialects targeted at Fiji residents as well as other ethnic languages as perhaps fit the target area. Fiji TV, as reported here (SF#115, p. 2), also plans MCPC package with hoped-for July 1 start date. Two for one here?

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A solid dish with holes in it?

"On p. 14 March SF, you note a 12 foot C-band antenna has the equivalent gain at Ku as a 1m solid dish. Dynasat.com here in Bangkok now produces a 7.5 foot which they claim at Ku has a higher gain than a 1.8m solid. The explanation given is, 'this is actually a solid dish with holes in it'. What is the difference between a C and Ku band dish, and when does C-band 'mesh' dish become a 'solid dish with holes in it'? Your answer will help us sort out what appears to be a conundrum in the laws of physics."

Siam Global, Bangkok, Thailand

The primary difference between a C-band (4 GHz) dish and a Ku-band dish (11-12 GHz) is the use of much shorter wavelengths (size of the transmitted signal in physical length terms). A C-band signal is 300% longer/larger than a Ku signal, and when designing a dish, to maintain good gain at Ku the designer must make every aspect of the dish system 3 times as good as at C. This includes the structural integrity (a 300% more accurate parabolic surface, or offset surface), the support structure integrity (flimsy back struts that move around in the wind at C-band are allowed to only move 1/3rd as far at Ku before there are losses in dish performance), the strength and rigidity of the mount (the dish to pole support must restrict dish movements to 1/3rd of the C amounts, at Ku), and the actual percentage of "solid surface" present. A mesh antenna surface starts life as a thin (2-3mm) thickness sheet of metal which is fed through a "perforating machine" to cut precise openings in the solid surface, and bend in tiny angles the remaining metal to increase the surface strength. A 7.5' (2.3m) dish that claims to be a "solid dish with holes in it" and also claims to have Ku gain equivalent to a 1.8m solid is admitting that it is 2 dB lower in gain at Ku than the same dish without holes in it. So the holes are doing *something* to reduce the gain, or, the 2.3m dish was not that good (accurate at Ku) to begin with. If they are taking a true solid (such as spun format) dish and punching holes in it, the major difference between this approach and a mesh dish is that a mesh dish uses panels that combine to build into a parabolic surface whereas as described to us, this one is one-piece punched full of holes. There can be but two reasons to take a perfectly good 2.3m solid dish and punch holes in it: (1) This reduces the visibility of the dish (the "eyesore" component), and/or, (2) In a near-equator area where dishes point mostly "up" it will no longer double as a cistern catching rainwater! Try to obtain one without holes and compare it with their standard product. The website (http://www.dynasat.com) looks like pretty ho-hum mesh dishes to us!

Polar mounting tracking?

"Has SF ever printed a foolproof step by step to set up a C-band dish for tracking Clarke orbit belt, and, can I get a copy?"

Paul Gray, Swift Creek, Victoria

SF#48, August 1998 by Pietro Casoar, now at Ikusi Australia. Also, Space Pacific TV show featured Pietro demonstrating how-to system. Copy of 8 page SF #48 report $8 including airmail postage from SF at PO Box 330, Mangonui, Far North, NZ.

HARDWARE EQUIPMENT PARTS UPDATE

APRIL 15, 2004

End of the end. GWN TV, available as part of a four channel video mux using two PAS-2 Ku transponders with PowerVu and SA D9234 era receivers, went through a transponder change March 22 (12.637 to 12.673) as the first step to closing down all PAS-2 Western Australia services June 12. GWN's move (to 12.673) included a change to Sr 5.000, FEC number of 1/2 but a sizeable number of universe receivers failed to act on the move instructions. Reactivation of the GWN service for those missing it involves knowing TID, UA, unique IRD identifier (from menu page) numbers of unit plus (and here's the tough part) the geographic location and name of the original receiver owner. The PAS-2 Ku service, managed by Telstra, was the result of 1998 squabbling between Optus and Telstra as both tried to be first on the air with WA service. At the peak, perhaps 3,000 D9234s were connected but that number included several hundred installed at rural WA translators (terrestrial low power rebroadcast sites) so the number of homes reached was significantly higher. With the activation of C1 last July-August, many disgruntled WA families "traded up" from PAS-2 Ku to brand-name Irdeto IRDs and matching Gold or other grey market cards, putting ex-PAS-2 D9234s back into the circulation stream. On June 12th (a date that might bend some), 12.281's ABC WA, SBS WA, WIN and several ABC radio services will close down, along with 12.673's temporary GWN service bouquet. Between now and then, a new MUX will be created on C1 (vertical seems logical, NA beam), or the customers merely converted to Optus Aurora and those with SA D9234s will be sent to a regional depot to do a cash-free trade out for a new(er) UEC or ADB receiver (from Hills warehouse) , provided they are the original owners and can answer some "security questions" when applying for a trade-up. Most PAS-2 antennas were large enough (1.2 and 1.5m being common) to support C1 service in WA - and one advantage will be that folks making this switch (not that they have a choice) will also gain the ability to become a subscriber to Foxtel on the horizontal side as well. Numbers? Domestic IRD registration (trade out) 1800 029 111; realignment of antenna assistance (through Hills) 1800 720 000; general queries (08) 9721 4466.

Scratch one - temporary. Apstar 5 scheduled for launch later in April has been postponed for 90 days or longer. Satellite (p. 28, SF#115) has suitable C-band footprints into Australia and New Zealand - if all goes as planned. No reason given for launch postponement - a lack of advance business could be one reason. Russian Express, AM 11, still scheduled for "April," but chances are they will only turn on north-facing beams (96.5E).

Promax MC-944 Spec-An, signal level meter. Reader query asks who is the authorised service centre for these meters - anyone know? Contact SatFACTS at skyking@clear.net.nz, or PO Box 330, Mangonui, Far North, New Zealand.

Installers looking for FTA work? After reading our report on p. 31, if you (or your business) are looking for opportunity to perform Ku-band installs in your geographic region on behalf of FTA services such as BVN (and others now operating or soon to operate), do this. 1/ Contact SatFACTS (skyking@clear.net.nz, or PO Box 330, Mangonui, Far North, New Zealand, or fax ++64 9 406 1083). 2/ Tell us who you are, contact numbers or e-mail. 3/ Define your coverage area - the region you are willing to "service" (example: 50 kilometre radius of Doolittle, NSW). We will list you/your firm in SatFACTS for one to three months - at no cost to you - so that equipment sellers might contact you for work. One requirement (there's always one!): You must be a current subscriber to SatFACTS to be listed!

3.5 GHz licences for rural areas of New Zealand, wireless WiFi functional, for as low as $500 under a 20 year term? If interested, contact radiospectrum@med. govt .nz prior to filing deadline of April 30. In a ground breaking move, 'little/local' folks and firms are to get first crack at this newly defined service.

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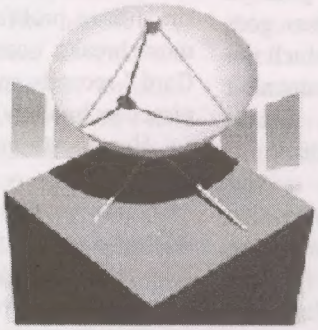

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Code busting radios -

NO physical CAM, NO card: "pay-TV without paying"

In North America, the latest "*gee whiz!*" or "*oh my gawd!*" IRDs to hit the marketplace seem like manna from heaven to an estimated 750,000 Canadian homes that continue to be hooked on American television some two years after the Canadian Supreme Court ruled it was not legal to watch US satellite TV. It began in 1984 when a Canadian firm created the original encryption-busting hardware to quickly turn the television industry's first attempt at securing transmissions into an expensive, ill-suited joke. That would be the early days of Oak Orion analogue encryption. For the next 16 years, Canada and Canadians have been at the forefront of busting virtually every encryption scheme floated, including the Murdoch NDS format when it was adopted by the USA's first Ku-band pay-TV service, DirecTV.

Virtually all major "hacks" of pay-TV without-paying either originated in Canada or were perfected there. Until early this year, every hack involved modifying cards, substituting cards, telephone links to a "master card" - but always with a card involved. No more. *No more cards.*

"Blackbird" is a receiver brand which according to Canadian sources requires no external (physically separate from receiver) CAM, no card, and comes out of the box ready to be loaded with special software by the user (or dealer). The user installs the receiver like any FTA device, goes to Internet to download a special software routine, then goes elsewhere on the web to locate a set of "code keys" which the receiver's menu allows the user to enter with the companion RCU. Once the "current month's keys" are resident, instant gratification - full-time access (in the case of Canadians) to as many as 1,200 channels of TV - or so they claim.

The hype surrounding this new gadget has been pervasive and the Canadian authorities, even armed with brand new heavy-duty-dollar-fine legislation, seem unable to stop something which only becomes a hacking tool after it is sold to the final customer in the chain.

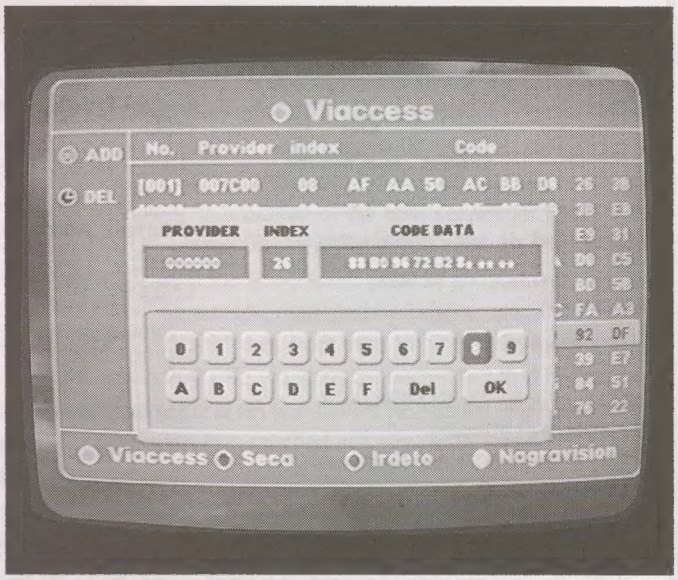
"BLACKBIRD: A legal free -to-air receiver that opens up all Dish Network channels. Finally, a complete solution that works without an access card. This product is for real and couldn't have come at a better time."

The web site (http://www.godss.com) promises to provide "public keys" (to cause the Blackbird to be updated as the programmers change keys) "on our site within a few hours of changing."

So is Blackbird unique, one of a kind, and only of interest in North America? Not quite.

The code key mystery

Nagravision, Seca, Irdeto and Viaccess all began with "version 1" encryption. Seca V-1 was hacked in Australia shortly after Canal + appeared on I701. The hack involved cloning of cards or modifying legitimate cards (MOSC - modified original smart cards). Irdeto 1, still in use by Aurora and as we write this report in limited use for Foxtel + Austar, was hacked by the same technology at about the same point in time - in Australia. World-wide, clone and MOSC cards have proliferated in their hundreds of thousands with most breaks occurring in Europe or Canada. The "Gold Card," recently so popular in Australia, was a variant to this piracy technology.



It's in the software. Receivers loaded with "Code Edit" software allow user to enter new "monthly key(s)" and unlock otherwise scrambled services. Receivers are shipped as perfectly legal FTA models; dealers or users insert new software, from "the web," which turns IRD into "code busting radio."

Hypothesis number one, oft-repeated, considered to be factual:

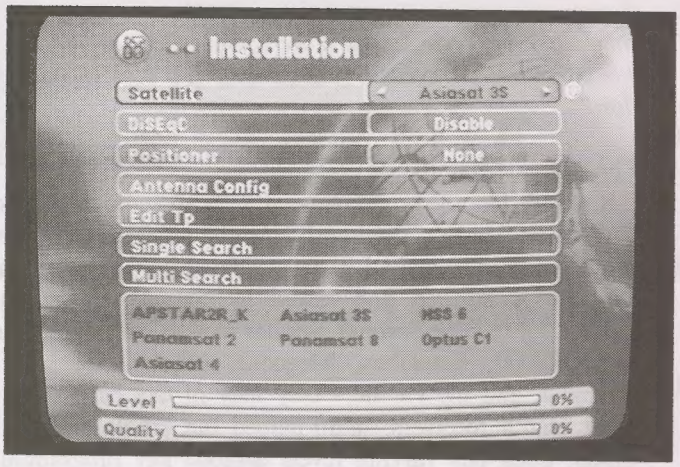
"Newer version FTA receivers, with the Thomson ST5518 microprocessor (chip), use the same chips in both CA and FTA receivers. The 5518 is under utilised for FTA and some programmers have worked out how to 'force' these receivers to accept manually entered monthly code keys, thereby making the FTA receivers CA receivers."

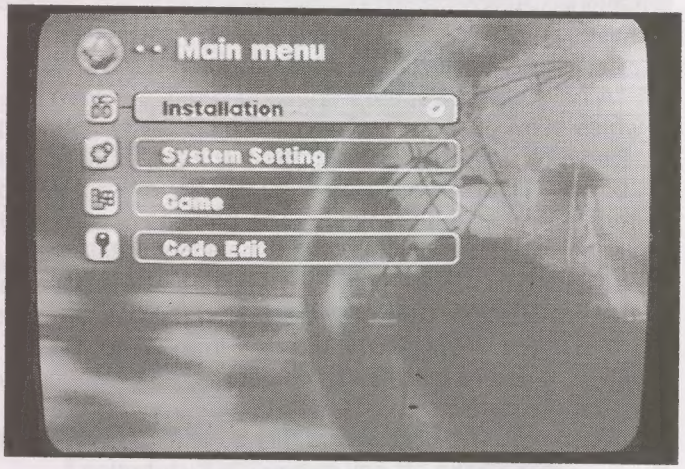
It sounds good. It is true, but in fact, virtually any modern FTA receiver, when loaded with appropriate software, will do exactly the same thing - accept manually entered code keys and decrypt CA services.

Hypothesis number two; brand specific:

"All of Strong's current receivers will do this, but not when they leave the factory, not when they leave the distributor, and possibly not when they leave the dealer. The code key software must be entered before they will 'grow' into a CA receiver."

This is true. And while Strong receivers do use the Thomson ST55XX series of microprocessors, there is nothing 'special' about the processors here. It all comes down to the software, and, the "on-line" (web) support given for using these products to access CA services. For, even if you could somehow locate and reload a receiver with code key software, lacking the new (often monthly) "numbers," the software mod is inconsequential; quite useless.





Code key IRD installation menu looks "normal" enough (left) until you discover a "Code Edit" option in the main menu (right). This allows user to enter current access code number/letter set which will turn a CA service into FTA (well, decrypted CA) using on-screen "key pad" shown in photo to left (p. 6) and RCU (remote control unit).

Hypothesis number three:

"Some receivers, reloaded with code key software capability, will do an "automatic update" with new code keys when a new set is transmitted."

Possibly true. And important because if you are falling into this "trap," and are totally reliant upon the long term integrity and ability of someone else to provide you with (web posted) new keys each month, suppose the poster simply goes away, disappears into the sunset? What you are left holding is just another FTA receiver for, without the keys, it is quite useless for its "secondary" purpose.

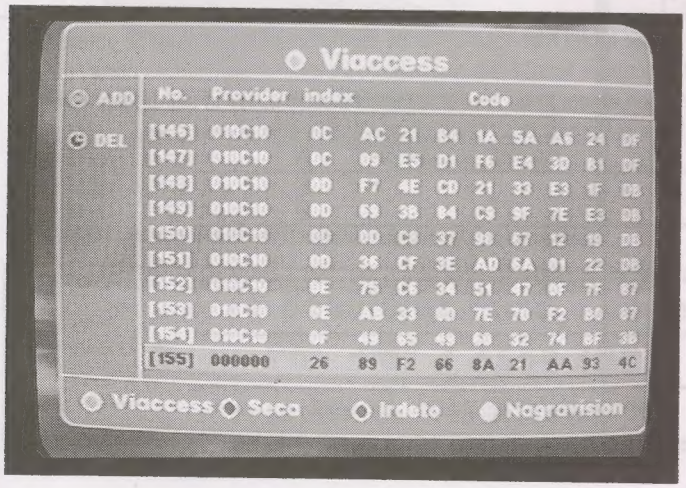
"*There are now more than thirty different receivers which claim this 'special' ability*" writes a world known hacking authority. "*Each one is capitalising on the sloppiness of the programmers to protect their product. The various '1' versions of CA were all software and without at least one hardware element, they would sooner or later be cracked. The information on hacking these services is everywhere and even a half-talented individual can create Gold cards or in this case software to penetrate the encryption scheme. Sooner or later, all '1' family encryption will be gone; until then, these new physical CAM-less and card-less receivers are simply the latest tools in an increasingly more freewheeling piracy world.*"

In support of this hypothesis, SatFACTS obtained a quotation from a Chinese firm (http://www.hitone.cn) that included this language and information:

"(pricing on) 2 Super FTA: No need for any card for Mediaguard, Viaccess, Irdeto and Nagvission (sic) 1.0. HT6210s USD ($)40.50, HT6310s USD($)40.50, HT6410s USD ($)40.50, HT6510s USD ($)41.50. CA models with a smartcard reader: HT410 USD ($) 68.00, HT430 USD($)68.00." These are, of course, not single unit prices - they pertain to a fully loaded 20 foot container as one shipment.

"*We can thank the rapid market growth of DVD players for this happening*" notes another encryption designer. "*The DVD is basically a satellite STB without a* (satellite) *tuner. Where the 55XX series processors used in satellite receivers are capable of dealing with (manually entered) code key sets, the DVD players are software programmed to deal with regional (zone) limitations and in some cases providing (Macrovision) protection against outboard copying. With so much commonality between DVD players and STBs, the same folks who are web-posting specific instructions for changing or eliminating 'zone limitations', have worked out how easy it is to read the monthly or periodic new code keys and then post them on a public site. Let's face facts - manufacturers in China, Taiwan and even Korea, to a lesser extent, have no qualms about adding 'features' which will sell more receivers. This is a very competitive marketplace and if you can produce a STB that does 'something special', you will sell more product. It is just that simple.*"

Perhaps. In the case of North America's DISH Network, where they employ Nagravision 1 and Nagravision 2, there are 9.45 million receivers in their pay-money universe. Over time, DISH can and will upgrade each of these cards (and



Left: Code key numbers picked up from the web have four options (Viaccess, Seca, Irdeto or Nagravision).

Web Loading Steps - example receiver (*)
1/ Load service to be "code edited" into receiver (CA mode)
2/ Enter Code Edit mode
3/ Select CA format "file" corresponding to your service (such as PAS8 Taiwanese Mux - Viaccess)
From Web sourced information, using on-screen key pad (p. 6)
4/ enter provider number (from web)
5/ enter index number (from web)
6/ enter (HEX) code set (from web)
7/ Confirm ("OK")
8/ "Back out" of code edit in steps to "save"; view
(* - code key loading sequence differs with IRD model)

authorised receivers) to V-2 and once that is accomplished, shut down the hackable Nagra-1 version of encryption.

Cablecaster Magazine (Canada) reported:

"A new, card-free, theft-enabling satellite set top box which allows users free access to all DISH Network and Bell ExpressVu programming has hit the market. The box, available for sale on ebay and underground web retailers, is called Blackbird. The box has caused such a scare in the States that when speaking to delegates at a Cablelabs conference, the president of major cable system operator Comcast mentioned the box by name and urged DISH Network to take immediate, drastic action. It comes with no conditional access card, cannot be disabled by pay-TV ECMs (electronic counter measures). The best way at this point in time to fight it is to choke off any avenue of distribution."

Not a new concept

Normally, objects such as this show up in the USA or Canada "first." This is the exception. SatFACTS first reported on the rumoured development of such a receiver (said at the time to originate in Taiwan) 19 months ago. More recently, a Thailand reader wrote a letter we published in SF#113 (January 2004; p. 4) detailing the runaway marketing of such devices in that country.

A distributor in Australia:

"I have known of the availability of web posted patching software for our receivers for six months or more. We do not, will not, software modify any of our receivers ourselves but there are dealers who will do so. Moreover, many (name of ethnic group) *clients have now discovered access to their country's programming and we have certainly witnessed an increase in sales to this particular group of people."*

Engineer with a programming service:

"It is on a short string. Sure, it works today, and maybe it will work tomorrow or next month. But as sales of these code key programmable receivers becomes more apparent, even the most resistant programmer will cease using Version 1 (of whatever format). I believe the proliferation of this system will speed up the eventual end of all Version-One CA systems."

USA importer of FTA receivers:

"The current price on code key receivers in North America is around US$369 and they are apparently selling well. I am advised they are illegal to openly sell but that has not stopped the grey market sales. I am concerned that because they are labelled as free-to-air on customs invoices that the government folks who check inward bound shipments will become over zealous and begin grabbing every shipment so marked; we typically have as many as four container loads someplace between Asia and here and while we are totally 'clean' with what we sell, that could put a kink in our cash flow!"

The Divitone "family" of IRDs

It sounds like the brand name of a cheap audio system sold at discount houses; "Divitone." It is one of several (some say as many as 30) code key programmable receivers, and Divitone is stocked and resold by Satmax (http://www.satmax.ws) in New Zealand. Similar models with names such as DSR8000, Emetabox, Megaone, Majik are sold in Australia, and the Pacific - they may in fact be, similar to blind search receivers, multi-named but single sourced in China. Each has varying levels of code key programming built in.

SatFACTS acquired one for test, and promptly made contact with an existing user here in New Zealand. It is fortunate we did so because out-of-the-box the receiver was producing no joy in the code key entry department.

Problem one: Divitone "supports" the product (model V-BOXA) with a web site (http://www.divitone.com) that purports to list the current code keys for a number of services. Of those listed (including some on ApStar 2R, LMI, Agila, etc.) only one was loggable in New Zealand and when we entered the web site posted keys, nothing happened; FTA reception, only. In fact, it would turn out the Divitone web site listing for "current" keys was incorrect. Our CO-user to the rescue - with the correct keys (which he obtained on http://www.megaone.com/emetabox/index.htm), but in the process, a strong reminder: Code key boxes are only as good as the integrity of the folks manning the monthly web site.

There is an interesting legal question here. The receiver arrived from SatMax less some important (optional) software but they also suggested links to a number of "updates" (which originated with a dealer in Thailand,) and after bringing the receiver up to date, V-BOXA was at least functional - if not with the Divitone web site keys. Score one for SatMax - they had broken no laws by selling us a strictly FTA receiver. But once the new software was entered, then, what is the receiver? Is it FTA or CA? By most definitions of CA, any service which you must pay to access is no longer FTA. But most definitions of "piracy" (the naughty 'P' word) quite succinctly spell out that using hacked or cloned or otherwise modified "cards" to gain access to a CA service is illegal (except in Australia where, if you do this in the privacy of your own home, you are breaking no law). But there is no card. None at all. So when you enter new software

Portion of typical web source site displaying latest (one hopes current, but we found that not true) code key number/letter sets to be entered in receiver. There is a weakness (and element of "trust" if we dare use that descriptive term) here; when the monthly/periodic changes occur, unless you have the ability to "source" the numbers yourself, you are dependent upon others to do so. Some versions claim ability to self-update (thereby eliminating need for anyone posting the current numbers) but most report this aspect is unreliable at this point in time.

Pan 10 68. 5	
12722 V 26657	
□ System ID: N(Nagravision)	
□ Provider: 00002D01	
key 00 : DE 00 22 48 75 79 AE C7	key 01 : 3E 65 7C 4E 84 DD 24 11

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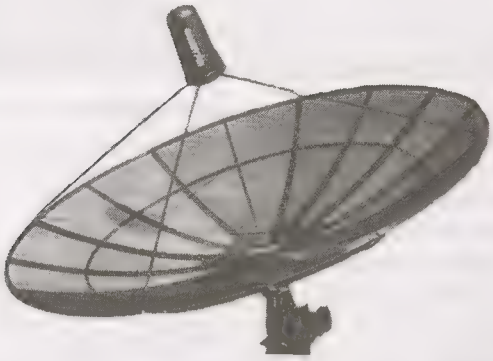
DMF227



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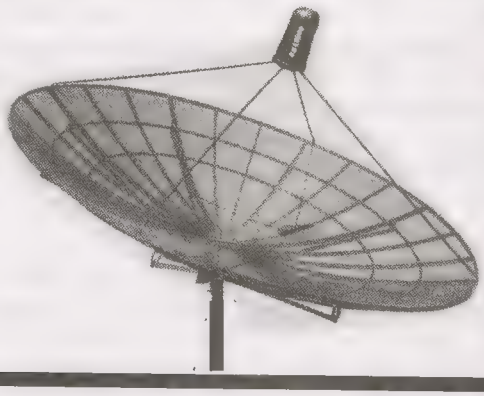

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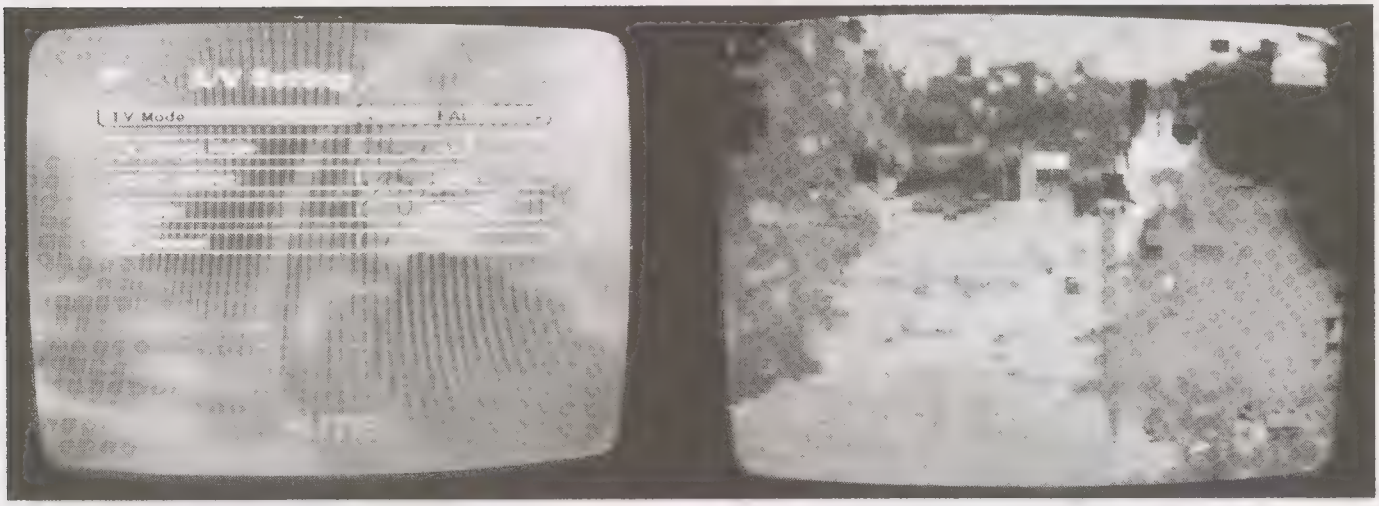
Email: info@psau.com http://www.psau.com



Auto or PAL "TV Mode" selection seems straight forward enough (selecting which "video format" for the output signals appearing at the RCA sockets) (left). Unfortunately (right) PAL was not an option until software had been upgraded.

in a FTA receiver and your "FTA universe" of channels suddenly grows larger, are you engaging in piracy? We are not sure what the answer might be! Is the act of entering new "code keys" tantamount to an act of piracy? Or, is it merely a way of increasing your "FTA" service list? Time will tell.

Problem two with the Divitone. One of the menu options allows you to enter the video output format you wish. NTSC is one choice. PAL is another. "Automatic" is a third. We chose the latter and the video was just terrible! Pixelations, gross ringing errors - everything you might anticipate from a piece of crap receiver.

OK - re-enter PAL. Same result, even worse. We fed the video signal complete with frequent pixelations to a vectorscope and looked at the various video component elements. Humm. Not "hum" as in hum but "humm" as in, "what the heck is this???" It was not PAL, and it was not NTSC. It had artefacts of both formats but clearly was neither. Piece of crap receiver?

Try NTSC. Now for the first time, clean (if not glorious) video on a multi-standard video monitor. OK - feed it into a NTSC to PAL standards converter. Result? Horrible horizontal banding - pink, yellow, green, floating around at a 50 hertz rate. So the NTSC image was OK on a NTSC capable video input multi-standard TV set, but after conversion to PAL, totally unacceptable. Back to our New Zealand contact who had been down all of these roads before us.

"Oh yes - the PAL problem; sorry, forgot to mention this. Set it to PAL and wait about twenty minutes - it will pixelate badly and then shut down. And come back on and the PAL will now be perfectly acceptable. I worried I was going to have to purchase a NTSC standards converter (to PAL) to make tape recordings!"

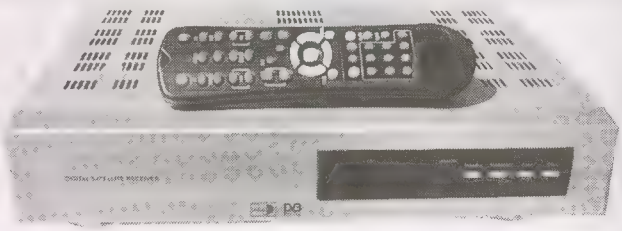
We tried this logically unlikely approach. Twenty minutes? Still pixelating and still running. Twenty hours? Well, for as long as 15 minutes we saw reasonably good quality PAL video and then pixelations began anew. Totally unacceptable.

The answer? Back to SatMax for a fresh injection of a new (just received) software program from the factory. In the final analysis? For NZ$325 or so, once the bugs were isolated and repaired, not a bad investment. But one can purchase the same receiver functions (in a different brand name) for not much more than NZ$200 in a totally-free-to-air box. So there is a premium attached to code key entry; NZ$125 or so, in this case. Some of this NZ$125 "sticks" at the factory level, meaning they have worked out a way to earn more money with "FTA" receivers. In the case of Blackbird, US$350 for a "FTA receiver" and a companion 4-way LNB switch (up to four separate LNBs selectable through the switch and fed one at a time to the IRD itself) - nearly NZ/A$500 at a point in time when less-versatile digital FTAs are selling for around US$100.

The technology

L-band signals (the IF created by the LNB[f]) input to a satellite tuner. The tuner selects the particular frequency on L-band of a SCPC or MCPC service, from data previously stored. The tuner outputs into a QPSK demodulator which in turn outputs a data stream consisting of everything that is on a MCPC/SCPC. This is fed into a layer demultiplexer which identifies the various component parts of the service (video, audio, teletext and decryption, if the service is in CA format). The data stream for the video then goes to a MPEG-2

Divitone is vanilla-unimpressive STB with no imprinted name front or rear decks; it merely says, "Digital Satellite Receiver" on front panel. No doors open, no CA slot is hidden behind anything. Rear deck is moderately well equipped with L-band loop-thru, twin SCART, RS232 (essential for downloading updated programming), AC (mains) switch and somewhat uniquely, two video (RCA) outputs. RCU has colour coded buttons to match on-screen code key functions (remember: "Green") - and instruction manual is of zero-assistance in code key department.



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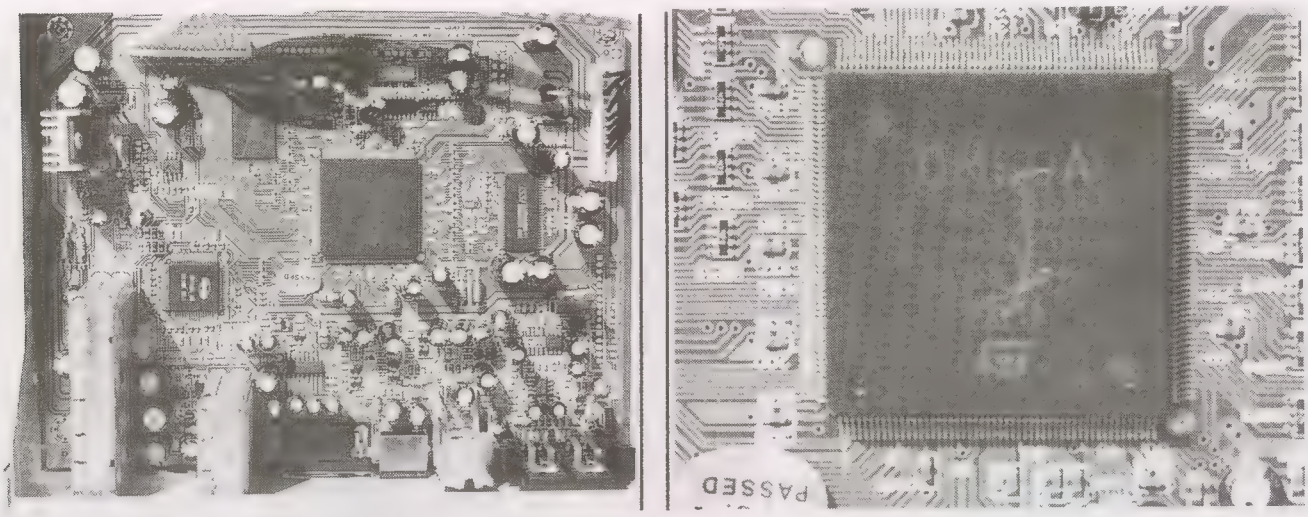


In most modern IRDs, the processor/CPU is the largest chip device on the circuit board (just above centre, left). Licences, held by firms such as Thomson, extend to various brand names (Omega; right) and "price is the name of the game." Whatever works, not necessarily best, at the lowest cost to the IRD manufacturer, is what we find "inside."

decoder which includes a video-ram to store the image before it is re-encoded into PAL, NTSC (or heaven forbid - SECAM). The data stream for the audio, meanwhile, has been sent to a MPEG-2 decoder followed by a digital to analogue converter.

All of this is kept in sequence and controlled by a microprocessor/CPU (central processing unit) which uses an operating system stored on a flash-ram along with the stored information for each individual channel (PID information. frequency, etc.) That is how FTA decoding functions.

If the transmission is CA (and here - the video only could be CA, such as with some PowerVu feeds for ESPN, CNN, or, the audio only - [CA] radio channels, the video and audio but not accompanying teletext - there are several options available to the programmer), and if the receiver employs a hardware CAM (or CI Module), it will have an additional built-in microprocessor and operating system stored on ram, solely for the purpose of decrypting the data streams. The smartcard, where employed, contains the information that makes the CAM work and the unique information (such as one finds as stored phone numbers on a SIM in a mobile/cell phone; see p. 13, here) that allows the service provider to address the system. There are two data streams, ECM and EMM, that are separated out by the layer demultiplexer and fed to the CAM. These data streams include codes which the CAM uses in descrambling, as well as information needed by the smartcard, to gain authorised access to the subscribed-to channels - and, to update the keys (codes).

The hacking

In a CAM-less receiver, IRD designers have worked out a system allowing the CPU (ST55XX processor) to "multitask" - that is, perform the functions of a hardware CAM with no CAM actually involved. This is sometimes referred to as a "software CAM," and this "instruction" is stored on the flash-ram as a part of the IRD's operating system. So now the CPU is performing an additional function; that of a CAM (decrypting).

In a card-less receiver, the CPU can also simulate the functions of a smartcard. For example, the Scientific-Atlanta (PowerVu) IRDs do just that.

This advance made it possible for legitimate software CAMs and software virtual smartcards. Hackers originally managed to work out how to combine the software for multiple decryption systems onto the ram that was used in hardware CAMs (e.g: the AMON program). Then, when IRDs using software CAMs (e.g: Humax IRCI 5400) became common, they were similarly able to replace the software that performs the CAM functions.

Historically, the NoOneMan patch for the DVB2000 software was the first to simulate the smartcard. There is a hint here as NoOneMan functions in the quite ancient (1996 era) Nokia 9500S which pretty well puts an end to the hypothesis that it takes a later version microprocessor to perform that function (the Nokia uses a Motorola CPU, also putting an end to the notion that chip "branding" is important). In the case of the current North American "Blackbird" rage, this IRD is doing multitasking whereas the Nokia with DVB2000 requires a hardware CAM. There is obviously more than one pathway here that works.

So, can virtually any MPEG-2 DVB compliant receiver be "restored" to do multitasking and code key editing? *Perhaps.* But it is not in the best commercial interest of the Chinese/Taiwanese/Korean designers to tell you *how* to modify older style receivers to perform these functions. It *is* in their best commercial interest to keep you coming back for more and more "new product" and as our knowledgeable hacking authority points out, "*That is the reason why older boxes are not looked after!*" And there is the "why bother" issue as well; with version-1 disappearing world-wide, "why bother to create new software for older receivers anyhow?"

The future? Certainly version-one encryption systems will be upgraded but for as long as this "hole" exists - somebody (in China) is going to fill it.

POLAR TRACKING DISH HELP?

SatFACTS # 48 (August 1998) contained a nifty 7+ page step by step set of instructions to help you better understand (and duplicate on your own) polar-tracking dish systems (the kind the allows you to sweep from straight north to either due west or due east and catch all satellites along the way).

Airmail copy 8 pages to you anywhere: $8 (NZ$, Aust$, US$ depending on where you are).

Fax (or email) credit card details, your address to ++64 9 406 1083, or, skyking@clear.net.nz, or mail with cheque to SatFACTS, PO Box 330, Mangonui, Far North, NZ.

More than a software box

The Dreambox folks have turned the encryption world upside down

When the Dreambox saw first light in this world, people of the trade had a smile on their face because a "no name" company dared to challenge the rest of the established satellite world on how to build Pay TV satellite receivers and those new guys even had the cheek to use LINUX as base for their firmware; LINUX, an operating system which was not recognized internationally at the time (since corrected). Open Source was considered a "no-no" by those "masters of encryption."

Well... the Dreambox has been sold over 200,000 times worldwide, even to remote places like Tahiti, Vanuatu, Tonga and other "funny" places in the world and is the most successful new development on the horizon. Dream Multimedia's engineer's expertise is well reknowned by now and it is no surprise at all that the long awaited DreamCrypt content protection has finally been launched (SF reported last year about this development); again it's Open Source and the concept of DreamCrypt can be downloaded as PDF file from Dream Multimedia's website for anybody to have a look at.
(http://www.dream-multimedia-tv.de/download/dreamcrypt02b.pdf)

DreamCrypt is license free and the guys encourage every manufacturer of satellite receivers to implement DreamCrypt in their products for FREE. The access system is very close to a mobile telephone prepaid system where the subscriber / user buys a access card (with mobile phones it's called SIM card). This smartcard card contains all data needed e.g. private keys and decryption algorithm. Matching public keys are sent to the card over air initiated by the subscriber / user loading airtime by using a scratch card system. The satellite system is a receiving system and unlike with a cellular phone, 3 new methods can be used to load airtime: 1. Internet webpage 2. SMS 3. Operator by phone.

To load airtime, the user needs to reveal the access card's serial number and the PIN code from the scratch card (hidden underneath scratch pad). The PIN becomes visible when user scratches on the scratch pad with a coin or even finger nail.

Scratch cards are available to top air time up for 3, 6 or 12 months (or any other period the Pay TV provider has the scratch cards issued for).

Just like with a mobile phone, the PIN can only be used once and is deleted from the database; in other words, the smartcard does not hold any airtime information, just like with prepaid mobile phones. This gives maximum security in case someone tries to tamper with the access card which brings us to the security aspect of this new system. DreamCrypt uses RSA routines to encrypt. So does Microsoft's Internet Explorer. The developers of the Internet Explorer claim their 128 bit key is sufficient for secure data transfer so let's take this as a standard. Latest WLAN (Wireless LAN) can encrypt data transfer through WEP (Wireless Encryption Protocol) using 256 bit keys; wow, so wireless is even more secure than Microsoft's Internet Explorer secure web page usage. To top the security issue, DreamCrypt uses 4096 bit RSA key encryption. This is so far the most sophisticated encryption system known. Just think of a password which is 512 letters long. I am actually going one step further to demonstrate it; I have created a valid 4096 bit RSA public key for PGP (Pretty Good Privacy from http://www.pgpi.org), an Internet encryption program to protect confidential content in documents, mail and even ICQ (see p.22, here, for Rolf's Public Key Block).

This is my own valid 4096 bit RSA key for PGP which is used to communicate with the development lab at DreamCrypt. Anyone who has PGP installed on his PC can import this key and add it to his public key ring and verify its authenticity!

One can imagine that with today's smartcard technology and security it will be virtually impossible to hack this new system. "*Not in my lifetime*," said a developer at a smartcard software company when he saw the specs on DreamCrypt and that's what the guys at Dream Multimedia rely on to encourage Pay TV providers to try their satellite content protection system.

Rolf Deubel's Encryption System

There is an old adage that to "catch a thief, you hire a thief." When we mention the Dreambox receiver, one immediately conjures up visions of the latest leading edge software technology for "sharing" of smartcard authorisations between two or more receivers. But the Dreambox folks are far more than spoil-sports chopping away at other established CA systems; they have created their own. The folks behind this "Hack us if you can!" technology are, like MadMax/aka Rolf Deubel, perhaps the best encryption folks outside of the Pentagon. Moreover, unlike the common garden variety CA system designs that preceded DreamCrypt, they actually give this one away - *free* - to receiver manufacturers. The above report prepared by Rolf Deubel (rolf@promotec.co.za).

Watching the "the other side" -

Some additional assistance in interrogating eastern (USA) satellites

"I have a 3.7m dish, live on a hilltop in Eastern NSW, and going west I can reach satellites right down to my horizon (76.5E and below). What are my chances of doing the same to the east?"

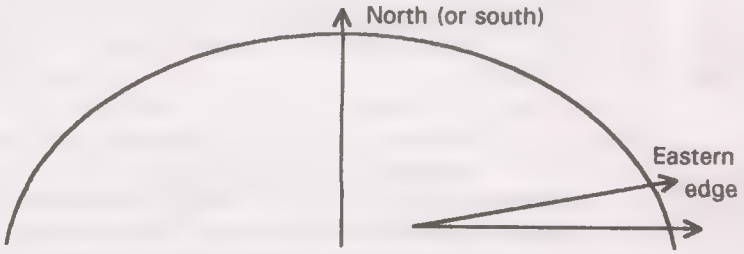
In fact, quite good. But there are new challenges here which do not present major problems going west, as we shall now discuss.

The geostationary (Clarke) orbit belt is a curved line which reaches the highest point ("zenith") directly north of your location (or south if you are reading this from north of the equator, as several thousand are). A satellite directly north (or south) of you will have the highest "elevation angle" reference your location. As you look west (or east) of due north/south, the belt is curving downwards until it literally disappears from view at some point approaching due west (or due east) of you. For any dish to point at that speck in the sky where a geostationary satellite resides, there are two on-earth measurements. One is elevation, the other is azimuth. Elevation is "how high up" your dish points while azimuth is high far west (or east) of due north from your location the dish must point to intersect the satellite's location.

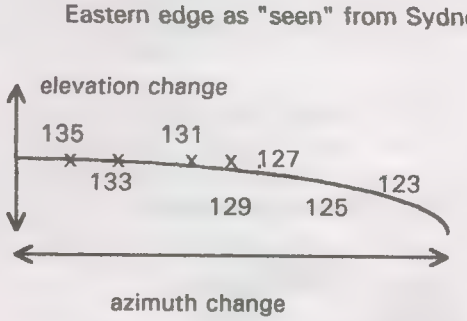
From American Samoa (see letter, right), Galaxy at 127W resides at 38.x degrees elevation, and 76.x degrees azimuth; significantly above the horizon. The same satellite from the SatFACTS site in (Far Northern) New Zealand is at 17 degrees elevation, 71 degrees azimuth.

No two satellite "designs" perform in the same manner. In fact, because the transmitting antenna "array" (system) is unique and customised for each satellite, even birds of the same design family often have differing "fringe area" coverage patterns. Therefore, you cannot forecast or predict what any satellite will do towards you once you are beyond their carefully measured and plotted "prime footprint"

Reference point east. For most of us,. the American/North American satellites are basically "at" or "near" the eastern horizon and require low look angles to interrogate. Elevation angle finder, in use at SatFACTS, to set dish to "sweep angle" (see text).



This is what your geostatioaary/Clarke orbit belt looks like from your dish. The "arc" is a portion of a circle, directly above the equator (35,800km). What this two-dimensional drawing does not depict properly is the compression or bunching of the arc at either the eastern or western end. From the perspective of your dish and feed, the far ends become short segments of a curved line - almost straight rather than curved (see right hand drawing).



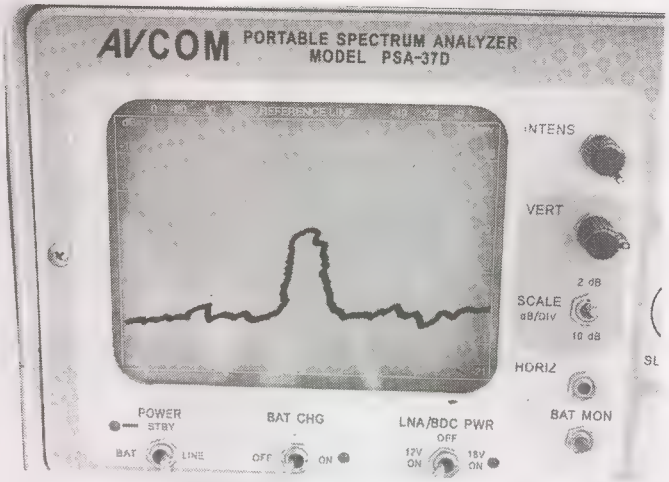
Moving from PAS-2 (169E) to PAS-8 (166E) is a 3 degree hop and your dish will move that far along the Geostationary/Clarke belt. But at end of belt, a 2 degree change may require a 1 degree shift of the dish as the belt compresses into a straight line.

135W from Sydney

"Regarding reception of satellites to the far east of us. Whilst not TV, I can easily receive the American GOES-West weather satellite located at 135W here in Sydney. Using my Icom R100 scanner , I have full scale signal strength readings on 1691MHz. The dish is an Andrew 1.5M solid unit, able to lay down horizontally to the east. The feed is a home made dipole made from RG213 coax in a male N-Type connector into a Peter Williamson made LNA. I imagine that the dish, even though it has a C-band feed, would be too small to even see any evidence of the TV signals on a Spec Analyser. Nevertheless, I'll have a look sometime."

American TV-direct at 14.16S/170.43W

"I read the article about the US Domsats. I have taken a peak there recently and this is what I found here in American Samoa. Although I could pinpoint most of the satellites seeing small carriers, less than 5 db carrier/noise ratio, I found that Galaxy 13 at 127W had a usable signal on a 5 metre dish on the Horizontal beam. Transponder 4 is Starz! East and was 9 db, transponder 8 was Starz! HD West with 12 db, transponder 12 was Starz! Theater East with 13 db, transponder 16 was Encore East at 10 db and transponder 20 was Westerns East at 8 db. They all have VC2 or VC2+ encoding so I could not decode them. Anyone know where I can get decoders? My 7 metre dish just picks up this satellite before the rim hits the ground. My 5 metre dish goes no lower because of my tree line. Soon I hope to elevate my 7 metre dish so I can look lower on the horizon. During Cyclone Heta it mated with a breadfruit tree but I cut out sections of 3 arms of a government 10 metre dish totalled by the cyclone, which matched the curve of the scrunched parts of the 7 metre arms and bolted them to what was not scrunched and after remeshing it is working fine."

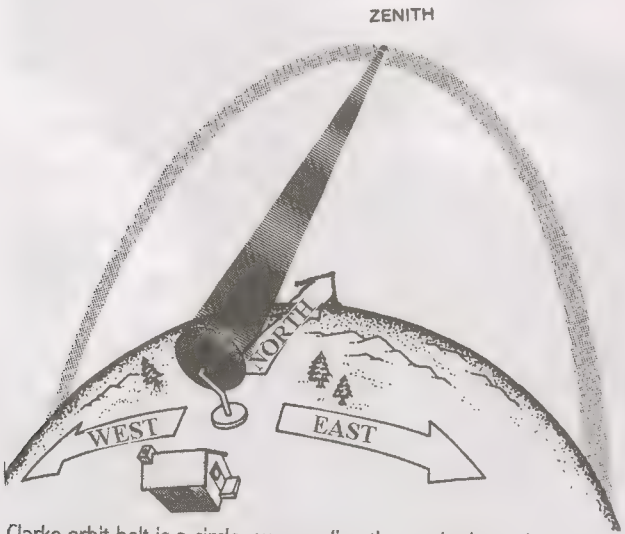


"Doctored" (as in, yes we enhanced it!) image on SpecAn display. We shot this in full sunlight which of course is a no-no when it comes to capturing the display (that's a PSA-37 "shortfall" - intensity goes to heck in a hand basket in bright sunlight). What it shows - +4 dB carrier to noise American signal (from our undersized 3m dish) on 135W RCA satellite. To "watch" this analogue NTSC signal? A 7m. dish.

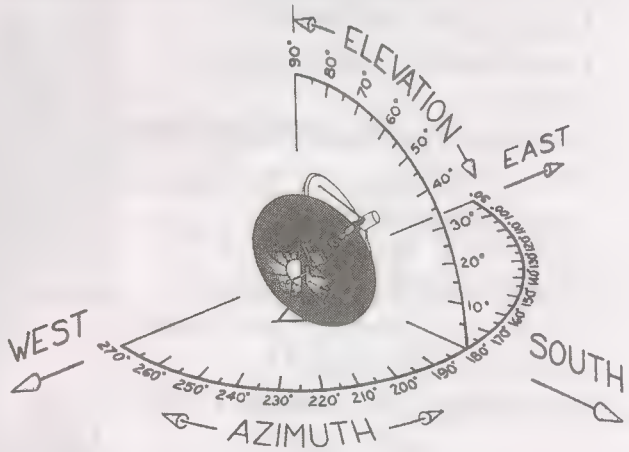
region. You only learn this by carefully pointing an antenna at the distant point, and, using either a spectrum analyser (best choice) or quality analogue receiver (weaker, second choice), "go fishing" for the distant signal.

Reader Bill Hyman in Pago Pago, American Samoa (14.16S, 170.43W), using a 5m quality dish, finds significant signals (up to 13 dB carrier to noise ratio) on the best of the Galaxy 13/127W transponders. SatFACTS, 2,200 miles to the southwest of Pago Pago, also found the same transponders to be significant - up to 5 dB C/NR on a smaller, 3m dish. Hyman's 13 dB C/NR suggests a 2.7m dish would break threshold on the signal, at his location. Our 5 dB C/NR suggests a 6m dish would be slightly on the plus side of threshold on the same transponder.

But there are other problems, especially for would-be viewers located in New Zealand, New Caledonia or Australia: Satellite "bunching." As the drawing on page 14



Clarke orbit belt is a circle, surrounding the earth above the equator at altitude of approximately 36,000km. The sun during March and September traces a pathway through the sky that approximates the invisible geostationary "belt." Just as the sun rises at your eastern horizon and sets at your western horizon, the belt does as well. (All artwork courtesy Mark Long)



If you are in the northen hemisphere (that's on the north side of the equator) this is what your azimuth and elevation angle coordinates look like - on paper. If you are south, just flip in your mind west and east (becoming east and west) and turn "south" into "north." The value in this drawing is that you can now visualise how "angles" work - elevation goes from 0 degrees (low, down at the horizon) to 90 degrees (which is where a satellite would be if you were on the equator and it lived directly above you). For azimuth, it may be more comforting to think of North as zero and then 0-90 east, west.

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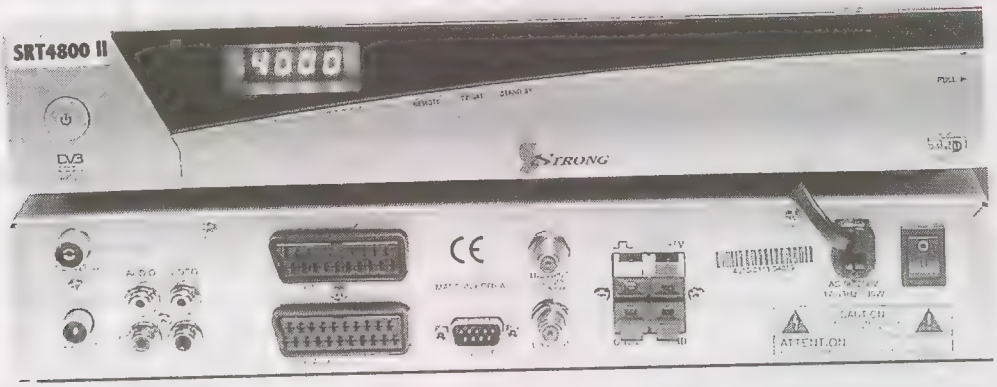

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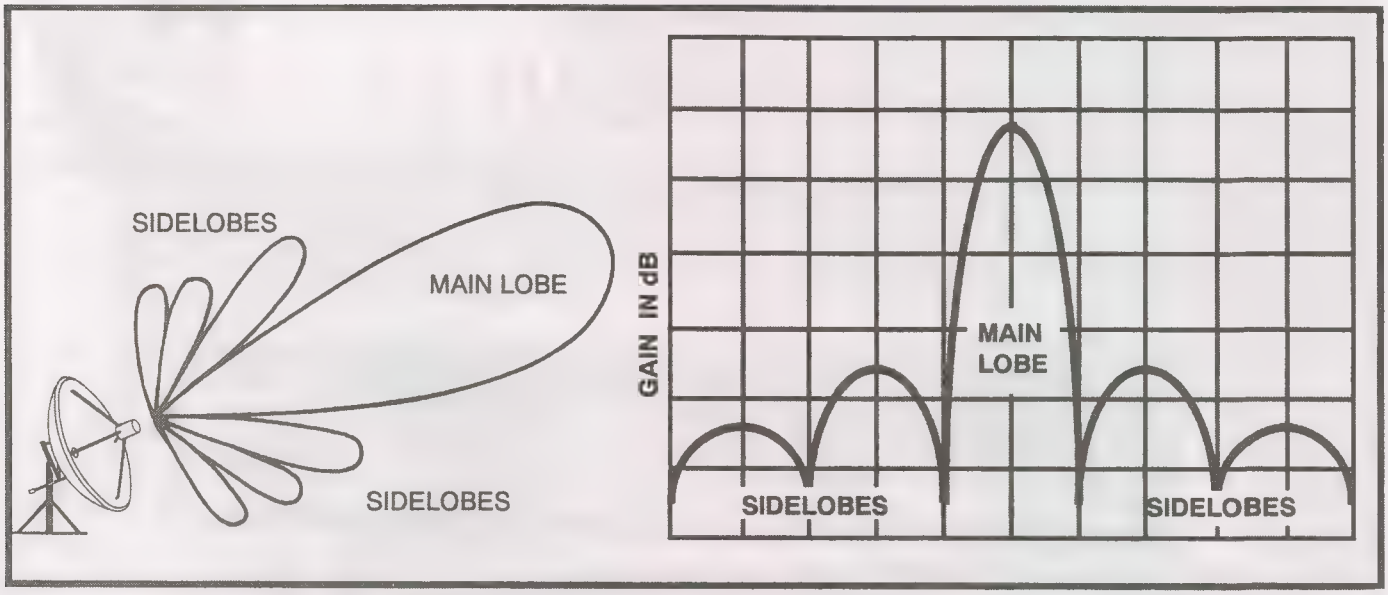

Antenna pattern? There is a "main lobe" which is the correct one to "point at" the satellite. But simultaneously, there are "side lobes" which point not at your satellite but rather at other nearby satellites (or the ground below the dish). When you are looking towards the west (or east), near the horizon, satellites "bunch up" from your vantage point and become more difficult to "separate" from their nearby neighbours. Result? A dish that is too small will "see" not only the intended satellite but also "see" nearby adjacent satellites simultaneously.

depicts, at either/both "ends" of the satellite belt, from your perspective or receiving location, the geostationary belt "smooths out" from a curved line to what comes closer to being a straight line. American satellites are spaced at 2 degrees (125, 127, 129 [W] etc.) and while adjacent satellites interleave their polarities (the transponders that are vertical on 127 are horizontal on 125 and 129), when we look back across the near-(our)-horizon "end of belt" from our location, they all begin to blend together. For example, from 129W (Telstar 7) to 127W (Galaxy 13) the change in elevation is only 1 degree at our receiving site, and 2 degrees in Azimuth. This means a dish with a broader frontal receiving lobe (see diagram, above) is moving less than 2 full degrees to separate the two satellites. A dish with a smaller frontal lobe (narrower beamwidth) is required to zero-in on the desired satellite so that the undesired satellite is "nulled" or not seen.

So there are two reasons for having a larger dish: (1) To have sufficient gain to crack the threshold barrier, and, (2) to have a narrow enough front lobe "spot" to focus solely on the desired satellite and reject others on one or both sides. The closer the orbit belt comes to your eastern horizon, the tougher it becomes to get the "focus" part right, no matter how fortunate you might be with the signal level portion. We found, with a substandard size 3m "search dish," that when we tuned in Hyman's STARZ! West signal (3860Hz, 1290 L-band) that by leaving the dish totally alone and simply rotating the feed polarity we lost STARZ! West (expected) but immediately locked onto HBO West (also 3860 but vertical, not horizontal) from next-door Galaxy 5 (125W). Yes, by moving the dish ever so slightly HBO West/125W did come up in level but both could be identified with one dish setting; the to-us peak dish setting for STARZ! West at 127W. Which says? Polarity, and control of it, becomes increasingly important as you approach your horizon in either (east or west) direction.

Not "true" polarity?

For a satellite close to either your eastern or western horizon, the polarities will almost reverse; horizontal (or what you have identified as horizontal from say PAS-2 or PAS-8) rotates under the influence of the eastern (or western) shift to become almost vertical (or, again, what you have come to expect is vertical using PAS-2 and/or PAS-8). That's OK - most of us can cope with a polarity swap. But "scatter/fringe" reception is often not that straight forward.

Hyman identified significant signals on Galaxy 13 on 5 of 6 active horizontal transponders but significantly, not on 3900H. There are also 5 equally potent vertical-side transponders; he could find none of these above 5 dB C/NR. This "fits" the pattern observed as far back as 1981-1982 in northern South America, Africa where reception from well outside the predicted coverage regions was observed. It is not unusual for only a single transponder to "leak out" into a distant coverage point even though, on paper, many more would appear to be "equal" inside of the prime coverage region (see our SF loggings, below).

There are skills involved here which a rush-to-finish-the-job kind of guy (or gal) will totally overlook. They are also very unlikely to have much luck. A "few hours" spent sweeping east, without some concept of the challenges involved, are very unlikely to be productive. If the largest dish you ever played with previously was a 1.8m, well, good luck. What we found was this, using a substandard 3m dish in northern New Zealand:

139W/AMC8: 1 carrier (out of 3 possible)
137W/AMC7: 4 carriers (out of 7 possible)
135W/C4: 3 carriers (out of 24 possible)
133W/G1R: 7 carriers (out of 24 possible)
131W/C3: 7 carriers (out of 25 possible)
129W/Telstar7: 5 carriers (out of 22 possible)
127W/Galaxy 13: 6 carriers (out of 11 possible)
125W/Galaxy 5: 6 carriers (out of 23 possible)
123W/Galaxy 10R: 5 carriers (out of 17 possible)
117W/SatMex5: 5 carriers (out of 25 possible)
111W/AnikE3: 2 carriers (out of 6 possible)

None of these will play on a 3m. We judge around 15 carriers (some including MCPC multiple channel digital) will play on a 7m. Ahead: RCA replaces 135 and 131W with two new promising satellites by midyear!

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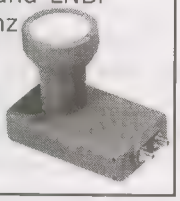

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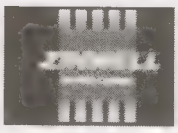

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Inside Foxtel Digibox STU

"The CPU/MPEG2 Decoder/Video Encoder/IO chip is ST Microelectronics Omega STi5517 (see http://www.st.com/stonline/press/news/year2003/p1291p.htm). Bad news - it only contains a SD (standard definition) decoder, so no HD (high definition) from this box in the future. Next to the CPU are two ISSI IS42S16400A-7T chips which are 64Mbit SDRAMs (http://www.issi.com/pdf/42S16400A.pdf). On the other side of the CPU is an AMD LV320T which is a 32Mbit Flash Memory chip for holding system software (http://www amd.com/usen/FlashMemory/ProductInformation/0,,37_1447_2248_6535,00.htm). Down the right-hand side are the I/O controller chips. RS232 Controller is a Maxim MAX214CWI (http://www.maxim-ic.com/quick_view2.cfm/qv_pk/1052/In/en). The USB host controller is a TransDimension TDUHC124 (http://www.transdimension.com/www/products/semiconductors/uhc124/index.html). Then there is an unused space for an ethernet controller and RJ45 socket. The Modem Controller is a Conexant CX81801(http://www.conexant.com/products/entry.jsp?id=831). Next to the card slot is a Philips TDA8024T Smartcard reader (http://www.semiconductors.philips.com/pip/TDA8024T_C1.html). Finally, the Audio/Video DEC is an AKM AK4702VQ (http://www.asahi-kasei.co.jp/akm/en/product/ak4702/ek4702.pdf)

Good news is it supports RGB passthrough from the VCR to the SCART. Bad news, it is a SCART-based chip and as such does not support component output; RGB only. And I have been unable to get any response from the RS232 or USB ports so my guess is they are disabled in the software until Foxtel decides to actiuvate them in the future."

Robert W, NSW

5mm x 5mm satellite tuner

"How much smaller can we make satellite receivers? Soon, perhaps, it will fit in your watch pocket! Philips Electronics has introduced the TDA8262 and TDA8263 tuner chips which they quite optimistically suggest are superior technical solutions for satellite receiver tuners. These are called 'silicon tuners' because a really small tuner chip (5mm by 5mm) replaces today's current version multi-IC device tuners that require cm's of space and a special container to shield it from stray radiation (in and out). The new TDA8262/8263 can be placed directly onto the main circuit board (as opposed to the present design practice of placing the tuners inside of shielded 'cans') and include all of the normal conversion, IF (intermediate frequency) filtering, wide range oscillator, and programable baseband filtering from a 3.3V rail (power source) line. The tuner chips allow the IRD designer to create the desired IF loop-thru system (thereby allowing one receiver input to feed a second unrelated receiver) for both DVB-S and DVB-T applications. We have for decades identified the tuner by its separate, sub-module, flimsy-metal self-container housing. The end is coming - no more!"

Satellite Man, New Zealand

There is a concern - which will answer with the first tests of a Philips silicon equipped IRD. How good is the sensitivity? Present quality tuners will turn a 6 dB Carrier to noise (C/NR) SCPC/MCPC signal into full non-pixelating digital images. Will this one equal that? Perhaps do better? We await the first "real world" tests! One school of thought suggests that SMPS power supplies, reknown for their creation of "noise garbage," actually "limit" or set a noise threshold for receiver sensitivity peformance. With the Philips mini-tuner mounted right on the "main board" of the receiver, will it be more susceptible to unwanted SMPS "noise?" Time will tell.

Key Code/Code Key number instructions

"The task of entering code keys is not made any easier by the web site postings. Most packed-with-receiver manuals are hopeless and web sites are designed for those who already 'know' what to do.

Step #1: Make sure you have loaded the relevant transponder (whether MCPC or SCPC).

Step #2: Go to Code Keys/Key codes on receiver menu (DSR8000 has a 'system preference', then 'parental control', then 'main menu ----system set' page which ends up with 'code edit'.)

Step #3: Next select the CA format which mates with the system in use by the programmner (typically four choices). This may in some receivers appear as 'system ID' (eg: CA format ID).

Step #4: Provider ID (from the web site posting such as http://www.megaone.com/emetabox/index.htm).

Step #5: The menu on the screen at this point should be similar to that shown in the photo on p. 6 here. If the provider ID has too many zeros (as obtained from the web site), *eliminate* enough zeros so that the number fits into the number of spaces provided in the far left box. If the number of entry points exceeds the number shown, *add* zeros.

Step #6: Different formats (eg: Irdeto, Nagra, Seca) will require different code lines. Seca requires 3, for example, while others require only one. The text line from the web site will make this plain.

Step #7: At the top of the box, to the right of the provider ID number, may appear an 'index' identifier (Seca, for example, uses 0C, 0D, 0E; that is an 0 as in zero, not a O as in letter). Others will require (DSR8000) a similar entry.

Step #8: The main entry is the index number sequence (made up of numbers and letters; see photo on p. 6).

Step #9: After all numbers/letters are entered, back out through save and to channel view.

Advisory: Not all web sites have the correct information for the current month's code key numbers for all services. Be prepared to do some searching to locate the correct numbers for the service of interest for the current month!"

RH, NZ

This is at the present time an immature technology and while there is a 'rush' to get receivers into the marketplace that do this particular function, not all - in fact most - are adequately supported by Internet (web) site posting information. There is a risk - not insignifant - that you will end up with a receiver which either is beyond you to "program" or worse yet, not supported by web-site postings. Yes, that is a caveat or warning. The dealer is and should be responsible for providing sufficient information to make the receiver do what you wish and if you are a dealer yourself, somehow before selling these receivers you should satisfy yourself that "supplier" backup will continue so that you are not "caught in the middle" between the customer/consumer and the supplier.

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WiFi Status in New Zealand

" There are three standards for WiFi: 80211B, 80211G and 80211A. The first to be used on a large scale was 80211B and most WiFi systems installed to date use this standard; 2.4 GHz and speeds up to 11 Mb/s. The newer 80211G is also used on 2.4 GHz and is capable of transfer speeds to 54 Mb/s. The 80211A standard is primarily used at the (newer available) 5.8 GHz and is capable of 54 Mb/s as well.

" Because 2.4 GHz was the first to be available, it contains the largest number of users and the majority of the equipment manufactured has been for this band. One advantage to 2.4 GHz is that it travels further than the higher 5.8 GHz band and antenna coverage is less directional than the higher frequency band. However, with greater distance and broader beamwidth antennas comes interference - congestion in major areas on 2.4 GHz is very significant and as often as not, system operational problems are caused by signals coming from other 2.4 GHz users who are simply getting into your own system 'link'. The current trend is to use 5.8 GHz to escape interference but as the transmission distances are shorter, sometimes you have no choice but to stay with 2.4 GHz. These bands are 'public frequencies' and anyone may use them by simply purchasing equipment and installing it - no licensing involved as SatFACTS has previously noted.

" Alas, there are so many systems now operating (called 'access points' or APs in the trade) that equipment originally designed for and intended solely for indoor short range use (such as within a building or room) are being pressed into service with outdoor high gain antennas and in some instances power amplifiers which many believe to be operating beyond the prescribed power levels of the rules. Interference has created some software solutions - fine tuning of operating frequency, for example, can sometimes solve a particular interference situation.

"Our experience leads us to use 80211G for indoor wireless LAN as it penetrates walls and buildings better than 80211A and it provides a higher data transfer rate (speed) than 80211B. Additionally, 80211G is 'backwards compatible' with 80211B. If you have a G access point (AP) and a B client card, the AP will allow you to connect at the slower unit's maximum transfer speed (i.e. 11 Mb/s rather than G's 54 Mb/s).

" For outdoor installations, we feel very strongly that 5.8 GHz is the better choice although at this higher frequency clear LOS (line of sight) is an absolute must. It is tempting to accept a job without LOS and you might even make it work - for part of the time or for an initial period of time. But the minute you stray into a situation where LOS is not available, it is an open invitation for someone else in the area to modify their own system or create a new one that provides a strong interfering signal that swamps your link."

(Sam Abraham, Manager, Babylon Communications, Auckland)

2.4 GHz for any use beyond shorthaul, inside-of- building links, is very much like the American wild-west; the guy with the biggest "gun" simply overpowers those who have neither the resources, skills nor comprehension to deal with the "bullies." However, there have been a number of long-haul success stories - up to 70+km in rural areas, where congestion has not yet become a problem. One partial answer is encryption of the data packets but this will not get you through very strong bully-signals.

-continued from p. 13; Rolf's keys -

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: PGP 8.0.3

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jndPgSAdUM8KDK=FJDB

(Email skyking@clear.net.nz requesting "public keys" for a one time shot of this encryption - much simpler than trying to re-enter it on your own!).

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 April 2004

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Them3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(.000)
	Korean Central	3665/1485H	1	2/3	3(.367)
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(.066)
	Ch Nepal	3626/1524V	1	3/4	15(.556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(.667)
	SE asia Mux	3569/1581H	2+ TV	3/4	12(.500)
	RR Sat mux	3551/1600H	8TV,10 radio	3/4	13(.333)
	JAIN TV	3538/1612V	1TV	3/4	3(.300)
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3(.333)
	TARBS	3520/1630H	12TV, 12 radio	3/4	28(.066)
	TVK Cambodia	3448/1702H	1TV	1/2	6(.312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(.667)
	KCTV/Korea	3424/1726H	1TV	3/4	3(.366)
	Thai Global	3425/1725V	up to 7?	2/3	27(.500)
InSat 2E/83	**ETV mux**	4005/1145V	6+ TV	3/4	27(.000)
	Hyd Dig 2E	3910/1240V	1	3/4	5(.000)
	Kairali TV	3699/1451V	1	3/4	3(.184)
	Indian mux	3643/1507V	3	3/4	19(.531)
	ETV Mux2	3485/1665V	4+TV	3/4	27(.000)
	Sky Bangla	3430/1720V	1TV	3/4	6(.000)
NSS6/95E	Free-X TV, plus	12.729V-Australia	5+TV	7/8	27(.500)
As2/100.5E	**Shandong TV**	4070/1080H	1TV	3/4	6(.811)
	Euro Bouqt	4000/1150H	6TV, 2 r	3/4	28(.125)
	Sichuan TV	3946/1204H	1TV + radio	3/4	4(.420)
	Reuters News	3905/1245H	1TV	3/4	4(.000)
	WorldNet	3880/1270H	4+/28radio	1/2	20(.400)
	Hubei/HBT	3854/1296H	1	3/4	4(.418)
	Hunan/SRT	3847/1303H	1	3/4	4(.418)
	Guan./GDT	3840/1310H	1	3/4	4(.418)
	In. Mongolia	3830/1320H	2 TV + 4 radio	3/4	8(.397)
	APTN Asia	3799/1351H	1	3/4	5(.632)
	Reuters/Sing.	3775/1375H	1	3/4	5(.631)
	Liaonin/Svc2	3734/1416H	1	3/4	4(.418)
	Jiangx/JXT	3727/1423H	1	3/4	4(.418)
	Fujian/SET	3720/1430H	1	3/4	4(.418)
	QinghaiTV	3713/1437H	1	3/4	4(.418)
	Henan/Main	3706/1444H	1	3/4	4(.418)
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27(.850)
As2/100.5E	**Macau MUX**	4148/1002V	5TV	3/4	11(.850)
	Feeds	4086/1064V	1	3/4	5(.632)
	Dubai MUX	4020/11430V	4+, radio	3/4	27(.500)
	Jilin Sat TV	3875/1275V	1	3/4	4(.418)
	Shanghai BN	3846/1304V	1	3/4	4(.800)
	HeiLongJian	3834/1316V	1	3/4	4(.418)
	JSTV	3827/1323V	1	3/4	4(.418)
	Anhui TV	3820/1330V	1	3/4	4(.418)
	ShaanxiQQ	3813/1337V	1	3/4	4(.418)
	Guan/GXTV	3806/1344V	1	3/4	4(.418)
	Fashion TV	3795/1355V	1	3/4	2(.626)
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(.640)
	Saudi TV1	3660/1490V	7+/tests	3/4	27(.500)
As3S/105.5E	Telstra I-Net	12.596V	no TV	5/6	30(.000)
	RR Mux	3669/1481V	up to 5 TV	3/4	13(.333)
	Zee bouquet	3700/1450V	10TV	3/4	27(.500)
	Ch News Asia	3706/1444H	1TV (+)	3/4	6(.000)
	BTV World	3725/1425V	1TV	3/4	4(.450)
	Arirang TV	3755/1395V	1	7/8	4(.418)
	Now TV +	3760/1390H	up to 8TV	7/8	20(.000)
	Star TV	3780/1370V	7(+)TV	3/4	28(.100)
	Star TV	3840/1310H	7(+) TV	7/8	26(.850)
	Star TV	3860/1290V	5(+)TV	3/4	27(500)
	AbuDhabi MUX	3880/1270H	8+TV, 2Radio	3/4	27(.500
	Star TV	3920/1230H	4+ TV	7/8	26(.850)
	Star TV	3940/1210V	6(+)TV	7/8	26(.850)
	CNNI	3960/1190H	8(+)TV	3/4	27(500)
	StarTV	3980/1170V	6+TV	3/4	28(.100)
	Star TV	4000/1150H	8(+)TV	7/8	26(.850)
	Sahara digital	4020/1130V	8TV	3/4	27(.250)
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	13(.333)
	Sun TV	4095/1055H	1	3/4	5(.554)
	TVB Mux	4110/1040H	3	3/4	11(.230)
	CCTV bqt	4129/1021H	4(+) TV	3/4	13(.240)
	Zee Bqt #2	4140/1010V	8(+) TV	3/4	27(.500)
Cak1/107.5	Indovision (S-band)	2.535, 2.565, 2.595, 2.625, 2655	33(+) TV	7/8	20(.000)
T'Kom/108E	**IndoBqt**	3460/1690H	up to 6	3/4	28(.000)
C2M/113E	**TPI**	4185/965V	1	3/4	6(.700)
	TVE Asia-Africa	4160/990H	1	3/4	5(.632)
	Anteve	4144/1006V	1	3/4	6(.510)
	Indo Mux	4080/1070H	5+ TV	7/8	28(.125)
	Indostar	4074/1076V	1	3/4	6(.500)
	SCTV	4048/1102V	1	3/4	6(.618)
	Indonesian Mux	4000/1250H	6+ TV	3/4	26(.085)
	Satelindo	3935/1215H	1	3/4	6(.700)
	Bali TV	3926/1224H	1	3/4	4(.208)
	Indo MUX	3880/1270H	3+ TV	7/8	28(.121)

Receivers and Errata
CA (#1. 3); FTA audio #2 (dm)
Global footprint, changes 02/03.
CA + 2 FTA(A1TV, IRB3)(
New 03/03; FTA
Thai + Indian services; FTA
MRTV3, MRTV (DM)
3TV, 5radio currently in use
PIDs 4132/4133
frequency change
Feeds to TARBS Australia and PAS-8
FTA
3FTA: TV5, VTV4, ATN Bangla
Not 24 hour
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
Several new ETV here; Asia beam
New - November 2002
Require authorisation: sales@bluekss.biz; some fta
New - October 2002
FTA TV + radio
Note: "Missing" April 1
Was 3923H; sometimes **FTA**
FTA; multiple audio services V2360, A2320
Note: "Missing" April 1
Note: "Missing" April 1
FTA + Guandong Satellite Radio A81
FTA: #1 Mongolian(A256), #2 Mandarin(A512)
Sometimes **FTA**; also 3895Vt
FTA & CA
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Thru TARBS Aust, occ. **FTA**
5 chs TV, FTA, some tests
FTA SCPC feeds
FTA , sometimes includes sport
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
Note: "Missing" April 1
FTA as of May 1, 2003
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
Signal useful for dish testing - no TV
Bluekiss adult here; CA cards sales@bluekss.biz
Mediaguard + Conax CA; 2 occ FTA
New September 2003; English + V1160, A1120
Bangladesh TV FTA started early March 2004
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + NOW, B'berg, Indus Music, MTA FTA
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Star Sports Asia (+), **FTA** NTSC; V512, A640 English
NDS CA as above; may NOT be operational
PowVu CA; new SR Apr 29
NDS CA; Star News India **FTA** VPID 514, APID 648
NDS CA w/ **4(Chinese) FTA**
New Sr September
new Sr, channels, Nov 2003
"History Channel" testing SCPC
MATV Chinese movies FTA; + CA
moved from 4115
Mediaguard (SECA) CA
NDS CA using RCA/Thomson, Pace IRDs; **2.535 has 2 FTA**
also 3586H/17.500, 3496H/19.615
FTA SCPA; NT/NC only
New August 2003
change from 4055V; FTA SCPC
Global TV - erratic new FEC 06/03
FTA (new 06-03); V2201, A2202
FTA SCPC; NT, New Caledonia only
undtable platform - not always there
test card - only - reported
FTA, may not be active full time
FTA; Sr change 01/03; erratic

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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	GlobalMUX	3760/1390H	up to 11 TV?	7/8	28(.121)
	Brunei/Sing	3733/1417H	1TV	3/4	6(.000)
	TBN/Trinity	3727/1423H	1 TV	3/4	3(.000)
	RCTI	3473/1677H	2	3/4	8(.000)
As4/122E	**STV mux**	38801270H	8 or more	3/4	26(.500)
	TVSN China CA	3864/1286V	1TV	3/4	4(.300)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(.000)
	Asian bqt	3960/1190V	up to 8	7/8	30(.000)
Jc2A 154	Cnet	3880/1270V	up to 12	3/4	30(.000)
	BYU tests	3915/1245V	2	3/4	3(.703)
MeasSs2	**Astro Mux**	11.602H	up to 17TV	3/4	41(.500)
	VTV MUX	11.522V	3 TV	3/4	9(766)
B3/152	Optus tests	12.407V	4+ TV, 4+ radio	2/3	30(.000)
	GlobeCast tests	12 501H	MultipleTV, radio	2/3	30(.800)
	Globecast tests	12.525V	8+ TV, radio	2/3	30(.000)
	Globecast Main	12.657V	8+ TV	2/3	30(.000)
	Globecast tests	12.720V	8+TV, radio	2/3	30(.000)
C1/156E	Optus testbed	12.287V/T1L	9tv, 24 radio	1/2 (*)	28(.199*)
	Optus test bed	12.322V/1U	mixed	1/2 (*)	28(.220)
	Unknown test bed	12.367V/T2	TV+	2/3	27(.800*)
	Aurora Biz	12.407V/T3	TV + radio	2/3	30(.000)
	Pay-TV	12.447V/T4	varying # TV services	3/4	27(.800)
	Unknown test bed	12.487V/T5	TV+	3/4	23(.333)
	Pay-TV	12.567V/T7	varying # TV services	3/4	27(.800)
	Pay-TV	12.607V/T8	varying #TV services	3/4	27(.800)
	Pay-TV	12.647V/T9	varying #TV services	3/4	27(.800)
	Austar	12 278H/T11	varying TV + data	3/4	30(.000)
	Pay-TV	12 358H/T12	varying #TV services	3/4	27(.800)
	Pay-TV	12 398H/T13	varying #tv services	3/4	27(.800)
	Pay-TV	12.438H/T14	varying #TV services	3/4	27(.800)
	Pay-TV	12.478H/T15	varying #TV services	3/4	27(.800)
	Pay-TV	12 518H/T16	varying #TV services	3/4	27(.800)
	Pay-TV	12.558H/T17	varying #TV srvices	3/4	27(.800)
	Pay-TV	12 638H/T19	varying #TV services	3/4	27(.800)
B1/160	Occ feeeds	12.380H	1 TV - *	3/4	6(.111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(.111)
	Net 7 service	12.397H	1	3/4	7(.200)
	Net Ten	12 353H	1TV + 1 radio	3/4	5(.100)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(.424)
	7 digital feeds	12.397H	1TV	3/4	7(.200)
	Feeds to NZ	12 411V	1 TV	3/4	6(.111)
	SBS Mux	12 420H	3+ TV, 2+ radio	5/6	12(.600)
	TVNZ DTH	12 456V	5+TV	3/4	22(.500)
	Nine Net	12.512H	1 TV typ.	3/4	5(.632)
	Sky NZ	12 519/546V	7TV 7TV	3/4	22(.500)
	Sky NZ	12 581/608V	6TV/6TV	3/4	22(.500)
	Sky NZ	12 644/671V	9TV	3/4	22(.500)
	ABC HDTV	12 603H	5TV	7/8	14(.300)
	Sky NZ	12.707/733V	8+TV	3/4	22(.500)
	Mix 106.3	12.574H	1 radio + data	3/4	1(.851)
P8/166	TARBS3	12.326H	13TV + radio	3/4	28(.066)
	TARBS	12.526H	13TV + radio	3/4	28(.066)
	TARBS2	12.606H	13TV + radio	3/4	28(.066)
	TARBS5	12 646H	testing	3/4	28(.066)
	TARBS4	12.726H	13TV + radio	3/4	28(.066)
	JEDLTVB	12 686H	11+ TV	3/4	28(.126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(.500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(.125)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(.470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(.470)
	NET +	4121/1029V	1 TV	3/4	4(774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(.470)
	Discovery	3980/1170H	8 typ.	3/4	27(.690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(.690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(.500)
	FilipmoMUX	3880/1270V	up to 8TV+radio	5/6	28(.094)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(.000)
	CCTV Mux	3829/1321H	up to 4 + 1 radio	3/4	13(.240)
	TVBS-N	3836/1314V	**1FTA**, 4+ CA	3/4	22(.000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(.632)
	CNNI	3780/1370H	3. up to 5 TV	3/4	25(.000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(.850)
	MTV	3740/1410H	8	2/3	27(.500)
	ABS-CBN APT	3712/1438V	1	3/4	3(.712)
P2/169E	Off-shore rigs	12.281V	3+ TV, radio	2/3	27(.500)
	WA PowVu	12.673V	1TV, 1 radio	1/2	5(.000)
	TARBS	4090V/1060V	9TV + radio	3/4	21(.000)
	Feeds	4037/1113H	1+ TV	2/3	6(.620)
	Feeds	4027/1123H	1+TV	2/3	6(.620)
	Feeds	4023/1127V	1 +TV	3/4	13(.328)
	Feeds	3966/1184V	1	2/3	6(.620)
	Feeds	3957/1193V	1	2/3	6(.620)
	Feeds	3929/1221V	1	3/4	10(.850)
	Feeds	3912/1238V	1	2/3	6(.620)
	Feeds	3898/1252V	1	2/3	12(.000)
	Middle East	3836/1314V	4 typ	3/4	13(.331)
	Feeds	3803/1347V	1	3/4	6(.000)
	PAS/BBC mux	3744/1406V	3	3/4	21(.500)

Receivers and Errata
test cards (11), new Sr/FEC 01-03
FTA ; Singapore 23hrs, Brunei 1 hr;Brune V1200
New PIDs 10-03, reload
FTA SCPC, Australia, New Caledonia, some English
First TV mux to appear this new brd, erratic service
CA; Mandarin Chinese version of TVSN?
PowerVu, some FTA (Ch. 1 & 3)
CA & **FTA** NTSC. Japan, Taiwan
Cnet (Taiwan) tests; not full time
Erratic service; very strong NZ and Australia
Aust East beam - **3 FTA** + 14 CA
WA only? Skew path, intended Asia
now differs from 12.407 C1; **tune ch FTA**
Nat B beam; unusual parameters-wrong NIT
GlobeCast
Globecast "home" 1 February; temporary?
Testing - **not** fulltime - erratic (GlobeCast)
testing as of late Feb; * - may be temp #s; on and off
testing as of late Feb;*-may be temporary numbers
Tests; not always operational; NDS only? SBS.
NZ (90cm) + Australia **(Only svc left on NZ; C1)**
Australia NA only (leakage to Norfolk, New Cal)
Australia NA only ((eakage); 9-Net x 3 widescreen
Australia NA only (leakage to Norfolk, New Cal)
Australia NA only (leakage to Norfolk, New Cal)
Australia NA; has unique NIT
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
"Home"CA, subscription available Australia, Nrflk
CA, subscription available Australia, Norfolk
* - plus 12.451H, 12.460H
* - plus 12.293V, 12.402V, 12.411V
Full schedule less commercials - links
Possibly feed to Tasmania?
PIDs vary, also try 12 360, 12 370
occ digital feeds, typ fta
Often NTSC; USA-Australia-NZ
Also 12 420H same params: SBS HDTV + w-s
FTA 4 channels (TVNZ x 4); +Maori, other here
testing digital feeds; Sr may vary
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
also 12..626,.643,.670, 688, & 706H
NDS CA, subscriptions available NZ
Radio SCPC is "cover" for high speed data
TPG/EurodecMDS CA, **occ. FTA**
TPG /Eurodec MDSCA, **1 radio FTA**
TPG/Eurodec MDS CA
TPG/Eurodec MDS CA; **2 TV FTA**
TPG/Eurdec MDS CA
June 2002-Irdeto-2 CA
Dateline west; east PAS2, 3901
PowVu CA
PowVu CA & **FTA**; subscription available
was PAS-2, previously 3992Vt
NET25 + FTA; new PIDS April '03; reload
PowVu CA, ch 11 DCP-CCP bootload; new FEC
PowVu/CA (some audio **FTA**)
PowVu CA & **FTA (EWTN +)**
NDS CA (6 channels), one testcard FTA
Myx FTA V1960, A1920 + radio FTA
Mixed **FTA** & CA, STC FTA +; Hallmark gone
PowVu FTA, replaces PAS-2 svc
Difficult because of CCTV cross pole
was As2; PowVu CA
PowerVu
PowerVu; Asian MUX, new parameters Nov '03
8 **MTV China FTA V289, A290;** rest CA
24/7 English track 2 news; V4096, A4099 11-03
PowVu CA, WIN, ABC NT, SBS
PowVu CA, WA only - D9234; see p 4 SF#115
Occ FTA (Chile +); BIG power reduction Nov.
Sporting feeds (occassional)
Sporting feeds from USA (occassional)
feeds to (USA) pay-TV
PowVu (FTA) occ feeds
PowVu (FTA) occ. feeds
PowVu (FTA) occ sport feeds
PowVu(FTA) occ. feeds
PowVu (FTA) occ. feeds
Irdeto 2 CA - subscriptions avail; Strong Tech
PowVu (FTA) occ sport feeds
BBC, test card FTA, others nominally CA

Phoenix Technologies

Satellite Equipment & Accessories One Stop Supermarket

Phoenix JT3100T Digital Terrestrial Receiver

- Digital Audio Output (S/PDIF)
- Dolby Digital
- Wide Screen (16:9) Hot-Key
- S-VHS, CVBS & RGB Video Outputs

- Super-Fast Channel Scan
- Electronic Program Guide
- Channel Rename Function
- Software Upgradeable

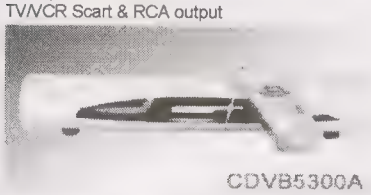
$180/each (for 6 unit)
$160/each (for 30 units)

Magix 8800 Receiver $220
(Made in Korea)

Coship digital receiver $220
(Iredto V2.09 CAM embedded)

SPACE 5300A CI Receiver
(Two Common Interface Slots)

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1 0/1.2 control
TV/VCR Scart & RCA output
$180



SPACE 2300 digital receiver
Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1 0/1.2 control
TV/VCR Scart & RCA output
$140

NextWave 3220 FTA digital receiver
(Made in Korea)

C & Ku band input, PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs
$160

NextWave 3220C digital receiver
(Two common interface slots) **(Made in Korea)**

C & Ku band input
High symbol rate >45,000
PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs
$220

Irdeto 2.06B CAM	$140	Zinwell C band LNBF	$35
Viaccess CAM	$140	Zinwell 10.70/11.3 /Universal Ku band LNBF	$25
65cm offset dish	$27		
75cm offset dish	$40	MTI C band LNBF	$35
Superjack DiSEqC 1.2 motor	$95	One cable solution C-banc LNBF	$50
Universal Mount	$15	Satellite finder	$30
2.1m mesh dish	$120	Silver Card (10/bag)	$125
2.3m mesh dish (motorized)	$170	Gold Card (10/bag)	$85
		RG6 Stripper	$20
2.4m heavy duty mesh dish (motorized)	$210	RG6/11 Crimper	$30
1.8m 6 panel dish	$130	Angle meter (made in USA)	$85
RG 6 Dual cable (305m/roll)	$75	Compass	$30

Optus C1 Aurora Kit
Coship digital receiver

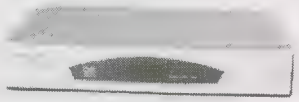
(Iredto cam embedded)
11.3 GHz/Universal Ku LNBF, 75cm dish, Mount bracket
$315/set
+Aurora card $75

LBC, ART, Al Jazeera Kit
Coship digital receiver

(Iredto cam embedded)
C-band LNBF, 2.3m Mesh dish.
$435/set
+Subscription fee $20/month*

Free to air kit (for NSS 6, Optus B3)

Including dish, LNBF, digital receiver, etc.
Start from $250/set



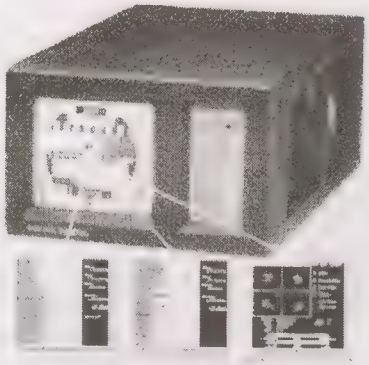
Changhong 1000 Digital Receiver
Aston 1.05 Cam embedded

Best Value For Indian & French
(C-band on Asiasat 3s & Ku band on Intelsat 701)
C & Ku band input, 2000 Channels.
$170

(Top quality) TESTING EQUIPMENT SPECIAL (made in Sweden)

Satlook MARK III $950
- 4,5" B/W monitor for PAL/NTSC/SECAM
- Satellite-receiver 920-2150 MHz
- Tunable sound 5,5-8,5 MHz
- Spectrum analyzer
- Expanded spectrum
- LNB voltage 13/18 V
- 22 kHz tone switch
- KU- and C-band (normal/inverted video)
- Built in rechargeable battery
- Only 3,5 kg complete with carrying-case

Satlook Digital NIT $1550
We are pleased to introduce our new SATLOOK Digital NIT. NIT stands for NETWORK INFORMATION TABLE, which today almost all DVB-satellites transmit as standard. The NIT contains information about the Satellite and TV/Radio-channels. It's very easy to identify a Satellite when reading out this information. The different TV/Radio-channels on a transponder can also be read-out.



Satlook COMBO $2550
- Input frequency: 2-900 MHz and 920-2150 MHz
- 4.5" B/W Monitor for PAL/NTSC/SECAM
- Lots of memory positions for spectrum pictures
- RS232 for PC-connection
- Built in, rechargeable battery. Only 7kg complete with carrying case

TV-PART
- 2-900 MHz spectrum analyzer
- Presents full range spectrum (and expanded)
- Very high accuracy, ±1dB (at 20°C)

SAT-part
- 920-2150MHz spectrum analyzer Digital BER, QPSK and S/N-ratio
- Satellite-ID and TV/Radio-channel info (NIT)
- Tunable audio bandwidth 5.5-8.5MHz
- LNB voltage 13/18V, 22kHz tone switch
- DiSEqC according to level 1.0, 1.1, 1.2
- KU- and C-band (normal/inverted video)

Full range of C/Ku band satellite dish - panel & mesh, prime & offset, from 45cm to 4.5m
Full range of Zinwell, MTI C/Ku LNBF - Dual output, one cable solution, C/Ku combination
Full range of actuator - From 12" light to 36" heavy duty
DiSEqC 1.2 Positioner & SupperJack EZ2000 Positioner
2.4 GHz AV sender and Remote extender
RG6 Cable and Motor cable
Full range of satellite accessories

THIS MONTH SPECIAL

SPACE 2300A FTA Digital Receiver $1300/(10 units)
Magix 8800 Digital Receiver $1200/(6 units)
Phoenix 2.3m Mesh dish $1650/(pallet of 10 sets)
Zinwell LNBF 15K C-band LNBF $648/(box of 24 units)

Come To Us For Your Best Deals

302 Chestertville Rd. Moorabbin VIC 3189
Website: www.phoenixsatellite.com.au
Phone: (03) 9553 3399 Fax: (03) 9553 3393
E-mail: sales@phoenixsatellite.com.au

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	**Adventists.tv**	4040/1010H	1	2/3	5(.900)
	Feeds	3868/1182H	1	2/3	6(.620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	occ feeds	3776/1374H	1 typ	3/4	5(.560)
	Korean Bqt	3771/1379H	1	3/4	9(.041)
I804/176E	**iPSTAR**	12.619H	1	2/3	25(.220)
	Tests-NZ beam	12.646H	1	3/4	22(.418)
	RFO Poly	4027/1123R	1TV	3/4	4(.566)
I701/180E	TNTV	11.060&11.514	9	3/4	30(.000)
	Canal+Sat	11 o10H	16TV, 1 radio	3/4	30(.000)
	TVNZ	4195/955RHC	1	3/4	5(.632)
	TVNZ/BBC	4186/966RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(o80)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	TVNZ/feeds	4161.989RHC	1	3/4	5(.632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(.041))
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(.000)
	Ioarana	3772/1378L	1	3/4	4(.566)
	TVNZ	3846/1304R	1	3/4	5(.632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(.111)
	10 Australia	3769/1381R	4	7/8	20(.000)
	USA feeds	3749/1401R	4?	?	2o(400)
NSS-5/177W	Pacific IP Data	3745/1405R	none-date	3/4	(44(.995)

Receivers and Errata
New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863,Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + **FTA** (BBC gone)
was 4148Vt; some **FTA**
occ feeds, typ FTA; also Sr 5.600
Korean MUX, reload 02/03
Tests, late May start; also 12.646H
Testing possible data links, June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
1+ **FTA**, MediaGd "2"; + 10.975 weaker
DMV/NTL early vers., occ feds, typ ca
DMV/NTL early vers. occ feds, typ ca
DMV/NTL early vers , occ feds, typ ca
'DTS Direct to Sailors; audio previously FTA - no more
DMV/NTL early vers. occ feds, typ ca
DMV/NTL early vers., occ feds, typ ca
east hemi 20.5 dBw +; new Sr
DMV/NTL early vers.,occ feeds, typ ca
SCPC, mixed CA and **FTA** feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
New PIDs Dec 03 very strong NZ, Pacific
FTA SCPC, East Hemi Beam-Tahiti
SCPC, mixed CA & **FTA**, feeds
NBA feeds - probably CA - new Nov 2003
PowVu CA & **TBN-JCTV FTA**
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment, top Sr check

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

Aston Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. Av-COMM P/L, 61-2-9939-4377.
AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Available from Satlink NZ www.satlinknz.co.nz. **(ONLY** KNOWN DISTRIBUTOR IN WORLD)
Divitone: "Left-handed" review SF#115; does "code key" entry. Available http://www.satmax.ws
eMTech eM-100B (FTA), eM-200B (FTA + Clx2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
Humax F1-CI. Primarily sold for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved).
Humax ICRI 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available, SF#76.
Humax IRCI 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available.
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; no known source in Pacific but apparently available in Singapore.
ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)
Pace DGT400. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced; Sept 18 (2003) "drop-dead" day; all were to have been "turned off" on that date (in fact, those with V1.13 CAMs may still be working; still does radio including CA, not TV).
Pace DVR500. Original DGT400 modified for NBC (PAS-2)/RSA use, with CAM equivalent to DGT400 but more reliable.
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370. No longer works with Austar/Foxtel.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia (SF has one - want it??? Collector's item.).
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below)- 222; terminated
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). For service only - callScientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigital.ife.com
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com.
SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).
Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superceded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin
Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.
Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.
Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.
UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel,limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.
Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447; long term teletext problems (loses TT).

Accessories:

Aurora smart cards. MYCRYPT (Irdeto V2) cards now available (Oct. 2003), Sciteq 61-8-9409-6677.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

WITH THE OBSERVERS

AT PRESS DEADLINE

Major AS2 moves: 17 Chinese SCPC moves, 16 to As3S as follows: 3706H Henan > 4166V; 3713H Qinghai > 4067H; 3720H Fujian > 4180V; 3727H Jiangxi > 4187V; 3734H Liaoning > 4194V; 3806V Guangxi > 3806V; 3813V Shaanxi > 3813V; 3820V Anhui > 3820V; 3827V Jiangsu > 3827V; 3834V HeiLongliang > 3834V; 3846V Dragon TV > 3886V; 3847H Hunan > 4082H; 3854H Hubei > 4035H; 3855V Shandong > 3895V; 3864V CCTV1 gone; 3874V Jilin > 3914V; 3946H Sichuan > 4051H. Globecast B3 real-time clocks wrong; T12 NIT incorrect!

AsiaSat 3S/105.5E: "3880H has added two new radio channels (APIDs 1123, 1143). (**TA**, PNG) "TVB 8 now on FTA 4110H, Sr 11.230, FEC 3/4; 4 channels, 1 I-2." (**Kalli**) "Middle East MUX, apparently Abu Dhabi origin, 3880H, Sr 27.500, 3/4 with following FTA programming: (1) Saudi 1, (2) Syria TV, (3) Oman TV, (4) Al Manar, (5) Qatar, (6) Sudan TV, (7) Jamahirya , (8) Abu Dha bi TV [Europe]- 10 channels when completed, to be refed to Globecast B3 for repeating to Australia, NZ." (**Swruki**, Aust.)

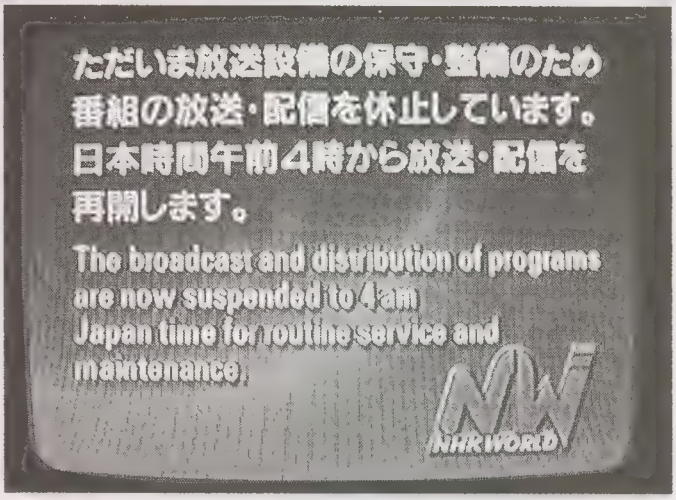
AsiaSat 4/122E: "Chinese version of TVSN on 3864V, CA, Sr 4.300, 3/4." (**Kalli**)

Intelsat 701/180E: "Lo profile 'Baccarat Game Channel' is gone from 4028R." (**DL**) "CNNI briefly FTA on 3769R, V2160, A2120." (**DE**)

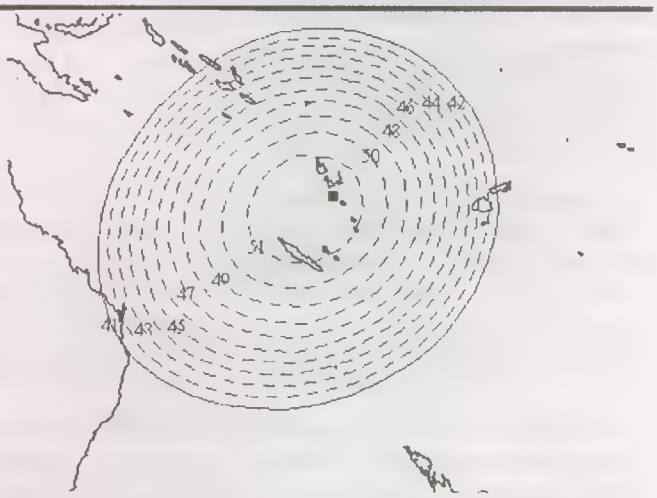
NSS6/95E: "New Skies promo gone from 12.523H" (DBS). "12.729V, Sr 27.500, 7/8 PID changes: SexZ TV V1025, A1026, SID4; New Skies Promo V1281. Blue Kiss and Express now also on 12.729V." (**Bill Richards**, Aust.)

Optus B1/160E: "March 20th, for several days, Optus ran 12.407V wide bandwidth digital package (Sr 41.062) but signal registered only 56% here on 90cm dish - well below others on same apparent pattern.(**DM**, NSW) "Maori TV began regular service 12.456V in TVNZ Mux March 28." (**Jerry T**)

Optus B3/152E: "Globecast has added 'Oman TV' to 12.525V (Sr 30.000, 2/3) with VPID 2260, APID 2220, PCR 2260. Video data rate runs at almost constant 3 MBit/s. They have also repaired TGN on same transpondet so it will now play on most IRDs (Nokia, UEC, etc.) without problems. They removed the code 85 entry from the PMT. However, Globecast's horizontal transponder T12, 12.501H (Sr 30.000, 3/4) continues to have the incorrect polarity in its NIT and the UEC will not load this transponder unless the dual polarity LNB(f) is powered by a second IRD at 18V. The UEC then loads with network label of 'GCA A3 Backhaul'. And this transponder continues to have the incorrect PMT code 85 entry which causes problems with proper loading and playing of TGN/Thai TV. On the radio channels that have multiple soundtracks, the UEC cannot select the additional soundtracks (perhaps the software designer didn't expect radio channels would have multiple/stereo/sound-tracks. Also new, testing: JCTV on 12.525V (Sr 30.000, 2/3) VPID 2331, APID 2332, PCR 2331 which at the time it was added made 8 TV and 2 radio, and, Church TV (V2360, A2320, PCR2360), and, Abu Dhabi (V2460, A2420, PCR 2460) with 3MBit/s video rate (still on T1 with 2MBit/s and difference in quality is obvious)." (**IF**, Qld) "SBS WA testing on 12.718V, VPID 102, APID 103 FTA. "(**NS**, Australia) "12.688H, Sr 30.000, 2/3 is a MCPC that loads GWN (VPID 2900, APID 2901, PCR 2900) , WIN, ABC NT and 3 NT radio services. The signal is weak in NSW, 39% on a 1.2m



Monday morning shut-down. It began with 1920's radio broadcasting - 24/7 services shut-down for 'routine maintenance' typically around 12 midnight local time Mondays and resume broadcasting 4 to 5 hours later, a "tradition" as old as radio itself.



NSS-5 (177W-183E) Ku spot beam S1 centred on Vanuatu. Inner circle is 51+ dBw predicted, outer is 44 dBw (0.95m threshold). Further out? Sydney, Northern NZ would be in region of 39 dBw (1.5m) for at-threshold lock if MCPC was FEC 1/2 (unlikely - add several dish sizes UP for FEC 3/4).

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for May 15th issue: May 3 by mail or 5PM NZT May 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

Foxtel's Digital Roll-out misjudges "The Human Factor"

Foxtel rolled out the red (green, yellow, blue and maroon) carpets on Sunday evening March 14 and pre-empted normal programming on as many as 23 of their channels to quite literally force viewers to "join them" in a self-immolation charade designed to convince the non-believers that life would be shallow, depressing and unfulfilled for anyone refusing to upgrade to their new "digital service package." Of course it was all about money; their money, the customer's money and quite unexpectedly for Foxtel, the hapless installer's money. While "stars of Foxtel" strutted in $3,000 suits and $10,000 ball gowns for the audience at home, as many as 800 day labouring Foxtel contract installers went out on strike refusing to accept $52.50 as "payment in full" to convert existing Foxtel (analogue cable) homes to the breathlessly daring, all things to all couch potatoes newly available digital (cable).

This is but one report from one installer, but it represents the sentiment of many hundreds more who refused to assist Foxtel in change out - until they got a better deal. More money, more training, and better recognition that without their under floor crawling, baseboard drilling, grubby to the extreme efforts, Foxtel digital (cable) was going no place. Fast.

"*I thought you might have a greater appreciation* for why we have gone on strike if you knew more about what it is we do and the conditions under which we do our work. What follows is a representative installation for the newly available Foxtel/Bigpond service.

"*First we have to get the street side* (mainline or feeder line) cable from the kerb to inside the home. Typical underground installations involve getting the 6mm diameter (RG6) cable and a 3 to 4mm phone cable up a 10mm inner diameter conduit for 20m or more. Yes, 6 and 4 equals 10 which also happens to be the available space in a 10mm piece of conduit. If the conduit is blocked (dirt, leaves, water, animal poo), it is your job to unblock it. That typically means getting out a shovel, digging up the conduit, finding the block, repairing it, reburying the conduit. If the cable was previously inside the conduit, and is damaged, it is the subbie's expense to replace it.

"*In areas where the cable is overhead*, the cable line has to run from the customer tap off point (at the nearest pole or mid-span between poles) through trees, sometimes across roads choked with traffic, to a connect point on a one or two story home.

"*Once the cable is at the home*, whether from underground or overhead aerial, the real fun begins. It starts with crawling under a house filled with heating ducts, material left behind by the builder yonks and yonks before, mud, leaking pipes dropping who-knows-what into the collected filth and everything the typical household can't bear to throw away so they shove it under the flooring.

"*Up through the floor or into a wall joice* and guess where they decide in their infinite wisdom they wish the TV and new phone outlet points? Behind a wall unit, behind a desk or how about behind the frig! Now you have a new title: 'Furniture Removalist'.

"*Eventually the wires are in place*, although seldom is the TV set going to be near to where the household computer is located. But the new digital cable box must connect (within 10m) to the phone line as well so here we go again!

"*OK - you are getting closer*. The customer's WIN98 computer is the next challenge. 'How long has it been since this was defragged?' you ask. The answer 9 times out of ten is 'de what???' The HD is overloaded, the RAM is slow, and even slower is the Foxtel/Bigpond authorisation and activation routine; twenty, thirty minutes (my time of course - not Foxtel's!) waiting with a telephone instrument stuck in my ear. Once through to authorisation, it is a mathematical certainty that almost precisely 50% of the time Bigpond cannot connect the customer. They say, usually after the third or fourth call from me, 'It looks good to the customer - from here.' So now the installer cops it from the customer because some quirk in their PC won't allow it to connect to Bigpond. Man - this is a fun life and the four hours I have now been on this one call has turned into an eternity.

"*Perhaps we can get back a small level of happiness* by making the new Foxtel digital work? Don't count on it. Here sits a VCR, sometimes properly connected, more often than not - not. 'Can you show me how to use this?' they ask. They mean, 'use the VCR!'. 'Had it for five years, never have been able to make it record anything - just plays back rental movies.' So here Foxtel is dropping in a new box that makes the VCR look like a child's toy when it comes to properly manipulating one's way through the layer after layer of menu and operating instructions. Hour five and counting.

"*Paying $52.50 for a changeover* to the digital system is an insult to the good techs out there. I don't get super, holiday pay, leave loading, rostered days off, lunch, morning tea or sick leave. I must be a registered company, pay all insurances (vehicle, tools, liability). I own (well, am paying for - monthly!) my van and tools, pay my own super, pay for parts (cable, ISO boxes - everything!), sign a carefully worded contract in which I promise to work 7AM to 7PM including six days and Sunday as required. I do my own paperwork (stock take, invoicing, purchasing, GST and more).

"*These are the folks who demanded* we take a 30% cut in pay last December and we got a 'bargained-10% cut' after striking. After four years in this game (I must be a slow learner or have a very high threshold for pain and degradation), I QUIT!"

...

The installers strike perhaps provided Foxtel with an excuse to reconsider their ability to deliver upgraded cable service. A Foxtel representative appeared on 2GB radio Friday March 12 to assure listeners that neither a strike nor misplanning by Foxtel was going to slow down the installation of (what Foxtel claimed) was a decision by 100,000 consumers to make the switch. The Foxtel man assured listeners, "there is a waiting time of *no more than* six weeks to have digital connected." Promptly the 2GB switchboard lit up with hundreds of irate callers disagreeing - the majority of those calling claimed their own previously Foxtel-scheduled upgrade was now rescheduled to May, September - even as far into the future as April - 2005!

...

Foxtel (reluctantly) reveals some of the technical parameters to their roll out

Q: When will satellite subscribers be able to see the new channels? **A:** "It would be unfair to the existing analogue (cable) subscribers to allow satellite subscribers to have the new channels until they are also available on cable." **Q:** Can the cable be used for the return line or does it have to be phone line? **A:** "The return line for cable will be via phone line." (Note: Foxtel cable has been 'tweaked' for digital signal delivery, primarily a function of broadbanding cable amplifiers and adding new digital modulators at the headend[s]. Foxtel is not investing in a hybrid digital upgrade to two-way cable which would allow telephone AND TV to share the same cable - as modern cable firms have done, are doing, in virtually every other portion of the world. Why not? Long term, if Telstra is made to divest from Foxtel, the last thing they want to face is a cable TV plant already equipped to compete with them as a telephone plant as well!) **Q:** What satellite box will expanded service digital subscribers have? **A:** "While the UEC 1000 decoders have been used to replace older (such as DGT400 et al) STBs, eventually all satellite subscribers will have a new PACE decoder installed. Foxtel has stopped the UEC contract - we are now exclusively installing (new) PACE units and will be changing them over an area at a time." **Q:** Will there be a timer (as with current cable analogue boxes) that can be set to change channels for unattended recording purposes? **A:** "Two years (or more) down the track we will get decoders that will have internal HD recording capability." **Q:** Will the new STBs support HD? **A:** "Foxtel is looking at HD but a new decoder would not be needed as this can be done by an 'over the air' upgrade." (Note: A Technical Topix note on p. 20 says, "The CPU/MPEG2 Decoder/Video Encoder/IO chip is ST Microelectronics Omega STi5517 [see http://www.st.com/stonline/press/news/year2003/p1291p.htm]. Bad news - it only contains a SD [standard definition] decoder, so no HD [high definition] from this box in the future." Foxtel further claims 1080i HD capacity - unlikely if our p. 20 analysis is correct.)

dish, so it is a mystery which beam/footprint it might be using. The GWN service here is also unusual (see below) - has 'GWN' on screen logo but the video/audio goes blank screen during advert breaks and it is widescreen. The content less the ads and the widescreen is identical to GWN on Aurora. Also noted here in lieu of GWN - '7 Sydney' and 'Prime NSW'. In fact, this seems to be a network feed for NSW 7 Prime affiliates, originating in Canberra. The video runs at a constant 5 MBit/s rate and a Nokia has some difficulty playing without glitching. However, if you go into the Nokia hidden menu (push 0 when in video MPEG menu), then item '5-mode' on this hidden-hidden menu (which is by default 'normal'), by resetting it to 'async' makes this channel play 'almost perfect."(**NS**, NSW; Ed's note: GWN exclusively with ads, news April 3) "Yet another GWN-tagged service: 12.460H, Sr 6.670, 3/4 has a network label of 'GWN' and 'News backhaul LBR' - possibly a WA to Lockridge link allowing local WA adverts plus news to be hauled to east coast for reinsertion into GWN's outward bound service - wherever that might be!" (**IF**, Qld.) "Transponder 8 continues to have 3 'little' MCPCs sharing the bandwidth: 12.704V, Sr 14.295, 7/8 is ABC WA bouquet; 12.720V, Sr 12.600, 5/6 is SBS WA bouquet; 12.738V, Sr 14.295, 7/8 briefly had WA/GWN, then 'CH1' label which was a 15 second video loop of fish swimming in the ocean (!)." (**Brandon**) "Have discovered yet another WA mystery: 12.738V, Sr14.300, 7/8 has been without programming for several weeks. Now, it loads (1) WINTV WA 16:9 (decimal V33, A36, PCR 33, text 47) and (2) GWN (V2190, A2911 + 2nd soundtrack 2912, PCR 2910, text 2916), both constant 6MBit/s. Apparently, not confirmed, requires MCRYPT card but may not be same authorisation codes as Aurora." (**NS**, NSW)

Optus C1/156E: "Optus Business TV 3 (BTV3) has shut down on 12.407V." (CP, Australia) "Gumala Radio seems to have replaced Australasian Retail Radio Network 12.527V, FTA." (**DL**, NSW)

PanAmSat PAS 2/169E: "NBN World seems to have left 4126V," (**GS**) "GWN's 12.637 to 12.673 (now Sr 5.000, 1/2) swap - SA D9234, previously OK now loads 5 x GWN, 6PR radio, two download channels but plays none. Satworks seems to load 12.281 but ignores 12.673 even when specifically loaded." (**LD**, WA)

Thaicom 3/78.5E: "3551H, Sr 13.333, 3/4, Nokia loads as 'Spectrum Connect' which appears to be a Greek language version of TVSN." (**Bill Richards**, Aust.)

Soapbox:"Hitone 'Super FTA' receivers which require no smartcard to access pay-TV services using STi5518 CPU, features DiSEqC 1.2, 2,000 TV + 1,000 radio channel memory and what they claim to be 'automatic channel searching' (http://www.hitone.cn); Hitone DVB Technology Co., Ltd." (**Arthur**, Hong Kong). "Fine print in the GWN swapout of SA D9234s for a replacement (UEC) receiver: SA's must be in 'working order' as well as coming from the same individual/location as GWN records indicates it began service at - so much for second hand or non-functioning units!" (**Grady**, WA). "I am confused by the Foxtel promo tape-loop covering FBO (Fox Box Office) movies. It says that if a home has two (or more) STBs, the FBO movie must be ordered on the same box (using its dial up phone line system) as the movie will be viewed on. As the FBO channels are (all) on vertical (as well as Foxtel's SBS and channel 9),

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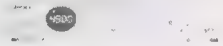

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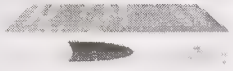

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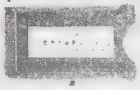

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obviously all Foxtel boxes now require access to both polarities. Which suggests a dual LO LNB that stacks the polarities (such as explained in SF#114, p. 8). I am curious whether Foxtel had custom LNBs manufactured, or arethey using off-the-shelf items and also what are the two LOs they use? Does the installer need to manually change the settings in the IRD, or do all Foxtel digital installations require a new LNB(f) even if there is only one IRD attached (so that the same settings for two LOs are in every new IRD)? Can someone answer these questions?" (NS, NSW) "While trying to reload the new GWN PAS-2 Ku 12.673V MCPC (Sr 5.000, 1/2) a number of strange things happened, using an eMTech and then a Powtek (blind search). First the eMTech had to make several passes before it locked and loaded, strange for a strong signal like this; suggesting perhaps there are two or more PATs (channel loading tables) but one of these could be empty. Then with the Powtek, it actually produced a FTA picture for a few seconds on one of the GWN channels. I have never seen even a glimpse of FTA video previously on a PowerVu channel - there is something quite unusual about this service!"(**MD**, NSW) "SBS and Seven Net have reached agreement for the 2004 Summer Olympics; SBS will carry all ofthe 'overflow' material including football (soccer) matches. Both channels will provide an average of 15 hours coverage starting 3.30PM AEST (through to 7AM) for 16 days." (**Soccer fan**, Victoria) "Posted rates paid to Foxtel installers is educational, if accurate: (1) New install with PSTN return path - $168; (2) New install with TLE return path, $1 28;(3) Migration to sigital with PSTN return - $59; (4) Migration to digital with TLE return path - $43; (5) Migration with no return path - $38 for first box, $7 for additional STBs same location. Installer supplies all consumables." (**CS**) "DGT400: I find this ex-pay-TV box will in fact play all Aurora radio channels (including those CA as well as some C and Ku radio channels on other satellites); just no TV." (**Trendy**) "We are anxiously awaiting appearance on B3, Globecast, of ten channel mux originating in Dubai - all to be FTA, representing a mixture of various Middle Eastern countries." (**Craig S**, NZ: Editor's note - originally hoped to be active by late March, see new MCPC reported for As3 p. 27 - this is where it will come from/through.) "Australian reports that Optus-SingTel trying to sell off its present (and future) 'satellite assets' for something in area of A$1bn."(**Drew**, NSW) "Combo C + Ku LNB and prime focus feed (Aspen Turbo-4200/CK16) claims C-band noise temp around 17K, Ku around 0.7 dB (http://www.9sat.com/)." (**Trevor**; Ed's note: Ku LO is 10.750 on one data sheet, 11.300 on another.)"TARBS has added Disney Channel (12.326H) in another move to slide in under the Foxtel/Austar gateposts." (**Benjamin**)

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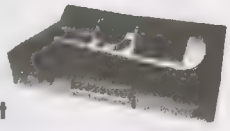

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AT Sign-off

"The Dutch Weekly," published fortnightly since 1951 by a firm in NSW, carries four advertisements of interest; all promoting the sale/installation of a satellite dish system to access Dutch-Flemish origin BVN-TV (and 3 radio channels) via Optus B3's Globecast MCPC.

Royaltronics (copy of advertisement, right) wants A$695 for a BVN system. Datek, covering Melbourne and Sydney, charges A$549 (including GST) and throws in a one-year parts and labour warranty. For an additional $150 (A$699 total), they will upgrade the customer to a "smart card slotted box" - whatever that means in a satellite world where increasingly smartcards are becoming yesterday's newspaper. In Queensland, OFFWORLDSAT promotes A$675 installed. New Zealand firm "Bel Babylon Communications" advertises an installed system for NZ$680, do-it-yourself for $500.

There is more. On page 23 of this 24 page newspaper format publication, an entire listing for BVN programming covering a two-week period, "brought to you by Datek Satellite."

If we total the advertising space used by the four sales/installation firms, it is slightly more than one-half of a page, more "newspaper space" by square mm than any single advertisement in the publication. When you throw in the full page BVN schedule, Dutch-Flemish television is a major part of the publication, second to no other topic or categorey.

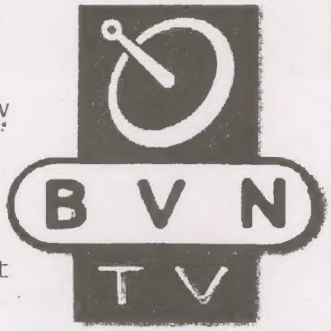
With four sales/installation firms advertising BVN systems, one might think the marketplace is saturated. Not quite, of course. While two firms appear to be targeting Melbourne, one in Sydney, one Queensland and one New Zealand, we all know that if an installer must drive more than 50km or so to do an installation for which he might - if very fortunate - clear $150, at one per day this is hardly a living. The Dutch Weekly reaches many interested folks who are hundreds of kilometres from any of these four firms. These readers have no way of knowing when their interest is aroused that their non-metropolitan location can often disqualify them from being a BVN family. They only learn this after making a call and discussing their options.

So here is our suggestion. While there may well be additional Austral/NZ firms doing the same line of work not represented in the pages of The Dutch Weekly, there are also several thousand qualified and capable 60-90cm dish installing individuals reading this publication who, under contract, could be acting as the "remote installer arm" for one or more of these firms. Perhaps it is one system per week, perhaps more - but if it falls inside your "territory" (defined as an area you would be willing to cover if asked to do an installation there), you provide a new option whereas at the moment the would-be buyer is stuck; do it him or herself, or pass, on BVN.

In any new business enterprise, there will be firms such as Datek which grabs the brass ring and goes for the gold medal. Most will panic at the commitment to spend $500 or more per month to advertise in The Dutch Weekly and plod on giving this opportunity a miss. It is an ancient Chinese proverb that relates, "For every journey there is a first step."

Royaltronics

De hoogpunten van de Nederlandse en Vlaamse televisie dagelijks gratis in uw huiskamer? Nieuws, actualiteiten, sport, films en shows? Alles wat u nodig heeft is een satelliet ontvanger. En daar kunnen wij u mee helpen.
We kunnen u zelfs in het Nederlands alles uitleggen over hoe het werkt.



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Here's your first step. The telephone contact numbers for the four firms advertising in The Dutch Weekly for March 15:

1/ Bel Babylon Communications (NZ 09 535 2304)
2/ Datek (Melbourne 1 300 137 490; Sydney 02 8783 7007)
3/ OFFWORLDSAT (Queensland 07 5429 5776)
4/ Royaltronics (Melbourne 03 9580 9133)

And final numbers, just in case you believe you see a marketing opportunity here and wish to reach the marketplace served by The Dutch Weekly: (NSW) 02 9569 4433, or, (NZ) 09 444 9995.

The trend to more and more free-to-air ethnic services, supported by home-origin broadcasters (BVN) or government agencies (DW) or private entrepreneurs (French TV5), is turning into a full-scale rush. The cost of satellite distribution has been cut by 90% in just five years, prompting Abu Dhabi's TV service to contract for not one but ten (10!) channels of free-to-air digital programming space through Globecast on B3. Abu Dhabi? Arabic, representing essentially all of the Middle Eastern countries in one FTA bouquet. Simultaneously, free to air receivers manufactured in China and sold in 100 lot shipments are now as inexpensive as A$67; throw in a dish, LNB, mount and some cable and you are still under A$200.

There is something of significant social change happening here - and it probably won't be "friendly" to the folks at TARBS who still operate under the illusion that they "control" ethnic programming into Australia. If TARBS has been a persistent "pest" to you and your FTA business plans, take joy from the new trend and rethink your own level of participation.

Installer-capable SatFACTS readers who have an interest in being assigned installs by "master distributors" such as the four listed above should now turn to p. 4 (here) to learn how you can be linked to FTA installs now on the grow.

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Hard Core (Serious) "How to do it" References

☐ Tech Bulletin (TB) **9402**: MATV (master antenna terrestrial) systems - wiring up a home, motel, hotel, camp site from one set of antennas - $15 all regions

☐ TB **9404**: Home Satellite Dish Systems. "Newbie" trying to work out what all those terms means and how a home system goes together? Perfect. $15 all regions

☐ TB**9405**: Satellite to Room Systems. Combining MATV (9402) with satellite (9404) to distribute satellite TV reception to multiple outlets - 2 to 1000+! $15 all regions.

☐ TB**9301**: Terrestrial Antenna Systems to eliminate co-channel interference, stack for additional gain. $15 all regions.

☐ TB**9302**: (Terrestrial) Weak Signal Reception Techniques; off-air TV reception to 300km+. Seriously detailed. $15 all regions.

☐ TB**9303**: UHF - Big Antennas for 300km reception over ground! Seriously detailed. $15 all regions.

☐ TB**9304**: Identifying and eliminating noise interference from fence lines, signs, electrical appliances. How to cleanup marginal TV reception. $15 all areas.

☐ TB**9305**: Cable TV - the basics. How a cable system works, how you can build one! $15 all regions.

☐ **Nelson Parabolic Manual**. The "bible" of building your own 13 foot dish from scratch. Serious stuff for dedicated builders. $15 all regions (supply limited).

SOFT CORE - recent back issues of SatFACTS (while supply lasts)

☐ **SF#93** (May 2002) - European Piracy, hundreds of piracy web sites - $10 all regions.

☐ **SF#96** (August 2002) - Nokia BDM, Faster Channel Zapping with Nokia - $10 all regions

☐ **SF#97** (September 2002) - Turning FatCAMs into multiCAMs - $10 all regions

☐ **SF#99** (November 2002) FunCARDS - how they work, software mods for Humax - $10 all regions

☐ **SF#100** (December 2002) d-box2 BIG report! AC3 Surround Sound for Nokia, PanAmSat's Terrorist Problem - $10 all regions

☐ **SF#101** (January 2003) d-box2 conversion to Linux, SA power supplies - $10 all regions

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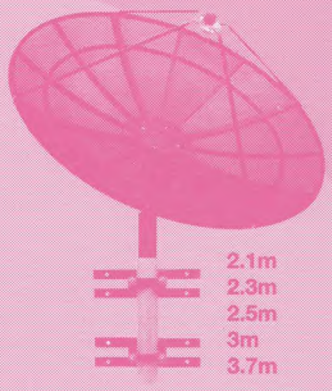

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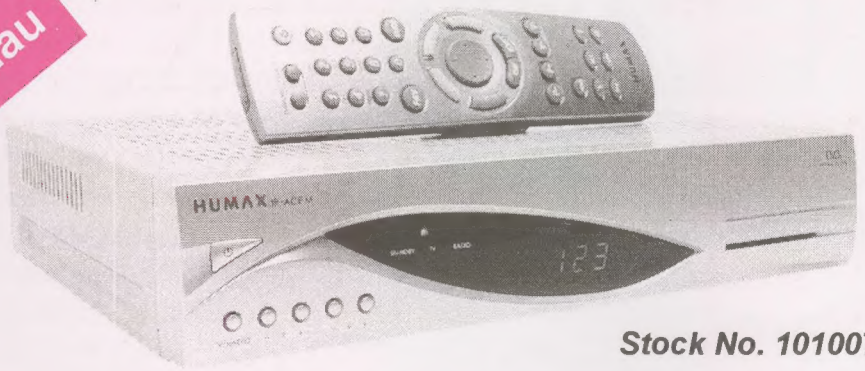

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